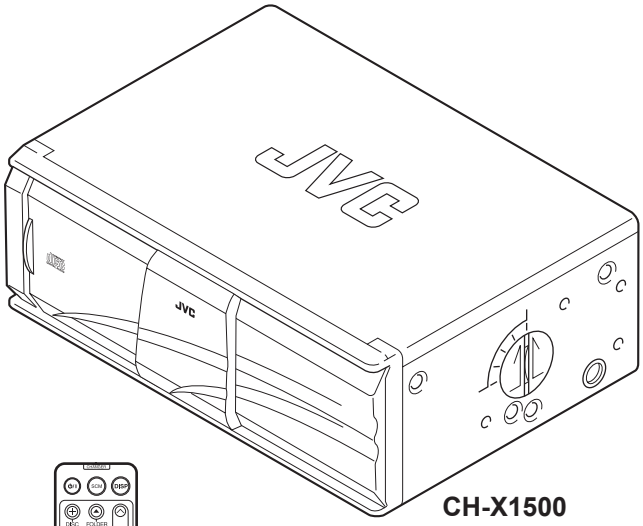
JVC

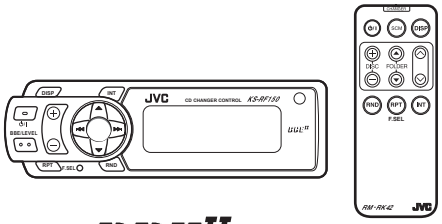
SERVICE MANUAL

CD CHANGER

CH-X1500RF



CH-X1500



KS-RF150

COMPACT disc DIGITAL AUDIO TEXT

MP3

CD-RW PLAYBACK

BBE II

Area Suffix
J ------- Northern America

CH-X1500RF is a combination of CH-X1500 and KS-RF150.
KS-RF150 is a combination of Remote control and the RF unit.

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No.49804
2003/03

SECTION 1
Important Safety Precautions

1.1 Safety Precautions

⚠ ***CAUTION*** **Burrs formed during molding may be left over on some parts of the chassis. Therefore, pay attention to such burrs in the case of preforming repair of this system.**

⚠ ***CAUTION*** **Please use enough caution not to see the beam directly or touch it in case of an adjustment or operation check.**

⚠ ***CAUTION*** **This unit can only be connected to the JVC car receivers/controllers equipped with MP3-CD changer control functions. If connected to any other receiver/controller, this unit cannot work (even CDs may not play back).**

1.2 Preventing static electricity

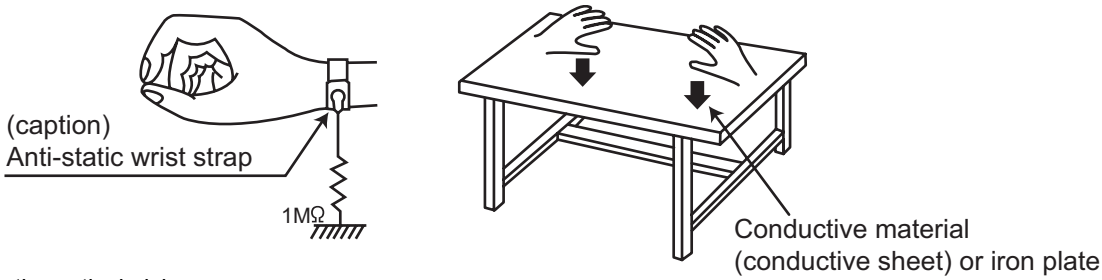
Electrostatic discharge (ESD), which occurs when static electricity stored in the body, fabric, etc. is discharged, can destroy the laser diode in the traverse unit (optical pickup). Take care to prevent this when performing repairs.

1.2.1 Grounding to prevent damage by static electricity

Static electricity in the work area can destroy the optical pickup (laser diode) in devices such as DVD players. Be careful to use proper grounding in the area where repairs are being performed.

(1) Ground the workbench
Ground the workbench by laying conductive material (such as a conductive sheet) or an iron plate over it before placing the traverse unit (optical pickup) on it.

(2) Ground yourself
Use an anti-static wrist strap to release any static electricity built up in your body.



(3) Handling the optical pickup
- In order to maintain quality during transport and before installation, both sides of the laser diode on the replacement optical pickup are shorted. After replacement, return the shorted parts to their original condition. (Refer to the text.)
- Do not use a tester to check the condition of the laser diode in the optical pickup. The tester's internal power source can easily destroy the laser diode.

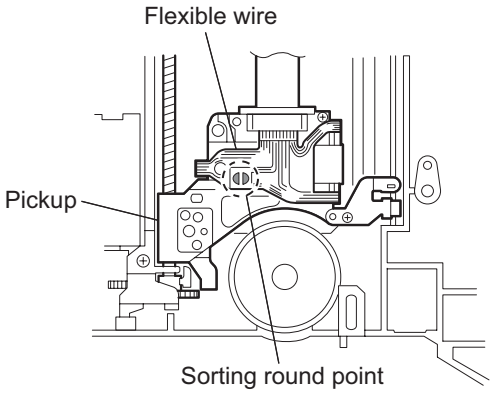
1.3 Handling the traverse unit (optical pickup)

(1) Do not subject the traverse unit (optical pickup) to strong shocks, as it is a sensitive, complex unit.
(2) Cut off the shorted part of the flexible cable using nippers, etc. after replacing the optical pickup. For specific details, refer to the replacement procedure in the text. Remove the anti-static pin when replacing the traverse unit. Be careful not to take too long a time when attaching it to the connector.
(3) Handle the flexible cable carefully as it may break when subjected to strong force.
(4) I t is not possible to adjust the semi-fixed resistor that adjusts the laser power. Do not turn it.

1.4 Attention when traverse unit is decomposed

***Please refer to "Disassembly method" in the text for the CD pickup unit.**

- Apply solder to the short land before the flexible wire is disconnected from the connector on the CD pickup unit. (If the flexible wire is disconnected without applying solder, the CDpickup may be destroyed by static electricity.)
- In the assembly, be sure to remove solder from the short land after connecting the flexible wire.



SECTION 2
Disassembly method

Perform operations according to the items to be disassembled.

2.1 Replacement of the Pickup

(1) After removing the exterior (top and bottom).
(2) Proceed to the "2.5.8.Pickup replacement procedure" section.
(3) When applying grease, refer to the Exploded View. Use new grease.

2.2 Mechanism Section

(1) Remove the exterior (required section only).
(2) The mechanism section is designed so that each unit can be removed separately.
(3) When reassembling, refer to 2-5.Precautions reassembling. (Use new grease when applying grease.)

2.3 Exterior Section

2.3.1 Removing the bottom cover and front panel assembly (See fig.1~4)

(1) Remove the screw **A** to unlock the mounting direction knob located on the side of the main unit.
(2) Turn the mounting direction knob in the direction of the arrow using a coin, etc. to remove it. (The knob can be removed only when it is set to this position.)
(3) Remove the four screws **B** attaching the bottom cover on both sides of the main unit.
(4) Turn the unit upside down so the bottom surface is facing upward.
(5) Lift the rear edge of the bottom cover slightly and lift the side by grasping the DIN jack section on the side panel, then turn it toward the front (raise upward) to remove the bottom cover.
(6) Release the four joints on both sides of the front panel, and turn the front panel toward the top cover (lower down) to remove the front panel.

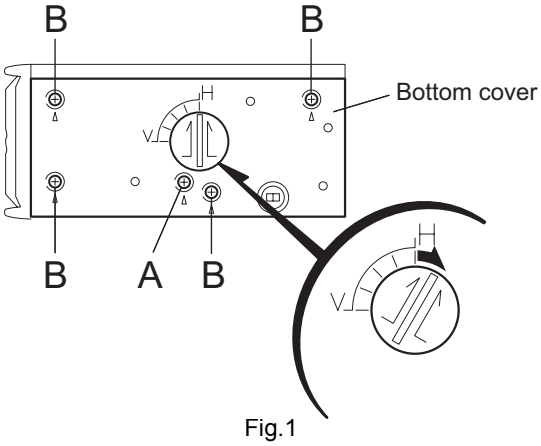


Fig.1

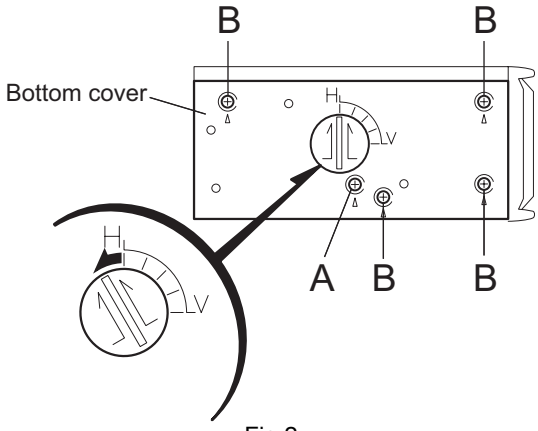


Fig.2

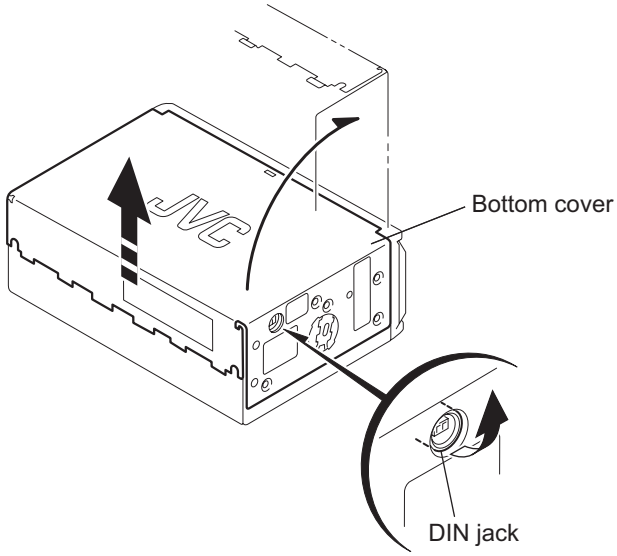


Fig.3

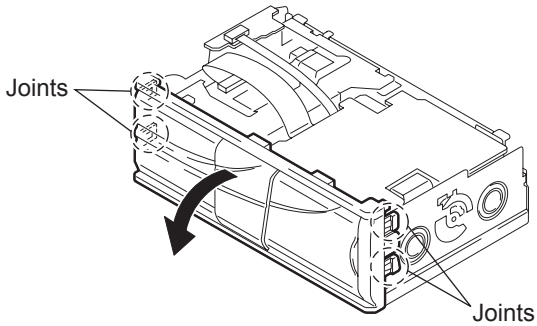


Fig.4

2.3.2 Removing the top cover (See fig.5~9)

(1) Pull out the dampers, being careful not to damage them.

REFERNCE:

When reattaching a damper, insert your finger to push out the center of the damper to mount it on the damper shaft, as shown in Fig. 6-1.

(2) Turn the damper spring bracket toward the top at a right angle as shown in Fig. 7, then push down the lower side of the damper spring bracket to lift it off.

(3) Remove the three screws **C** and **D** attaching the DIN jack board assembly, and remove.

(4) Lift the changer unit upward.

(5) Remove the damper springs from the mechanism chassis if required.

REFERENCE:

To reassemble, refer to the diagram below.

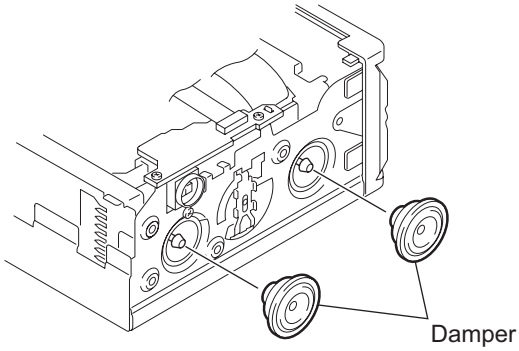


Fig.5

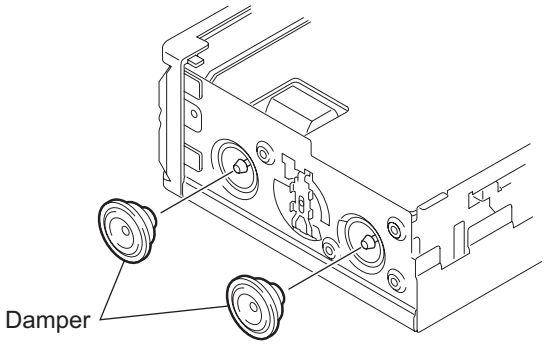
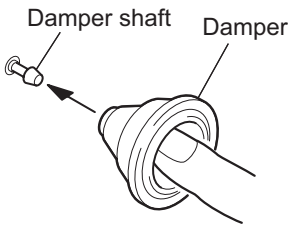


Fig.6

Apply alcohol to the shaft then immediately attach the damper. (After attaching, check that the shaft is correctly inserted.)



Push out with your finger before attaching

Fig.6-1

Turn to the top position (at a right angle) ,then the push down to lift off.

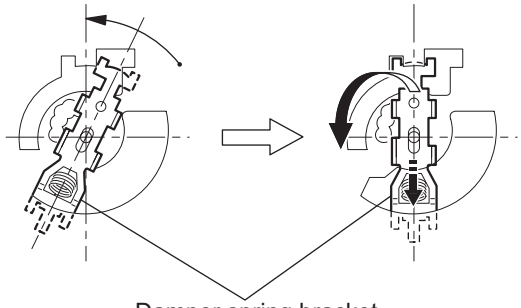


Fig.7

Remove the card wire if required

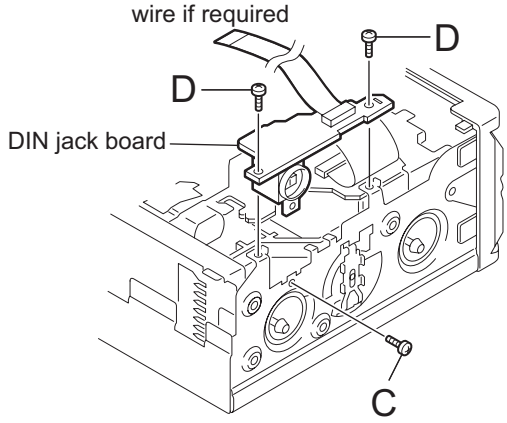


Fig.8

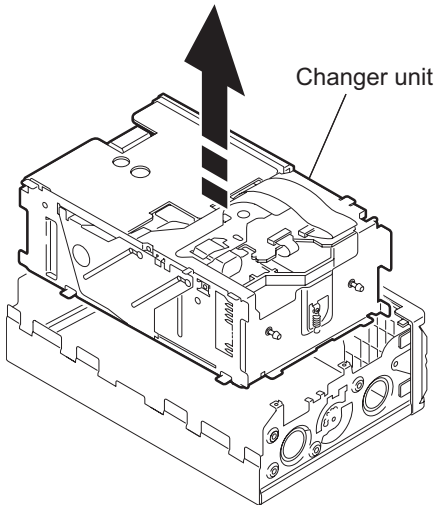


Fig.9

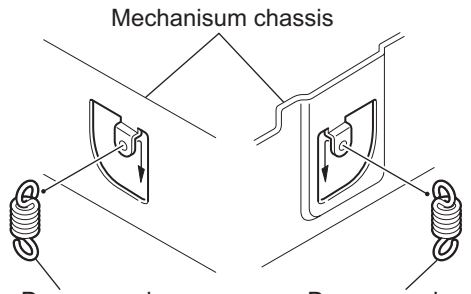


Fig.9-1

2.3.3 Removing the fitting (See fig.10)

(1) Remove the screw **E** attaching the fitting.
(2) Release the two joints **a** on the top edge of the fitting, then release the joints **b** at the left / right bottom edges, and remove.

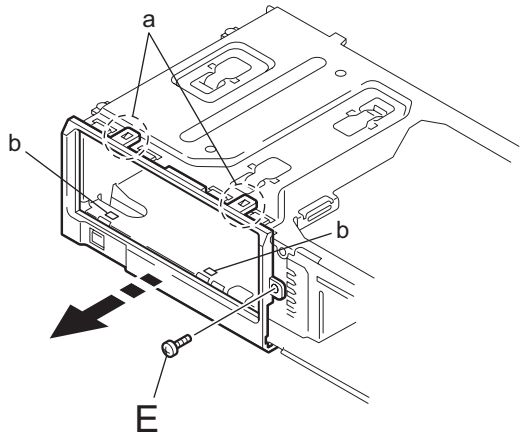


Fig.10

2.3.4 Removing the main board assembly (See fig.11)

(1) Remove the screw **F** attaching the power IC.
(2) Remove the four screws **G** attaching the main board assembly, and remove.
(3) Disconnect the wire from connector CN602 on the main board assembly.
(4) Disconnect the wire from connector CN501 on the main board assembly.
(5) Disconnect the card wire from connector CN604 on the traverse mechanism board assembly.

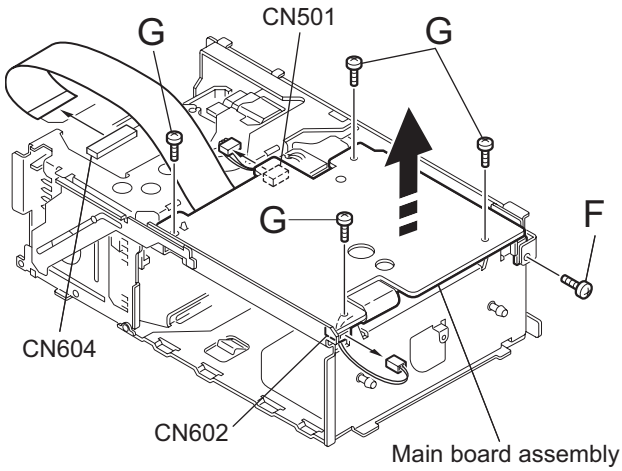


Fig.11

2.4 Changer-mechanism section

2.4.1 Remove the sensor assembly unit (See fig.12)

(1) Remove the two screws **H** attaching the sensor assembly unit.
(2) Release the springs on the back of the sensor assembly unit from the holes on the chassis.

2.4.2 Remove the magazine lock arm (See fig.12,13)

(1) Remove the magazine lock spring from the front side of the chassis.
(2) Remove the poly-washer attaching the magazine lock arm.
(3) Turn the magazine lock arm in the direction of the arrow until the notch is at the **c** position to remove it from the chassis.

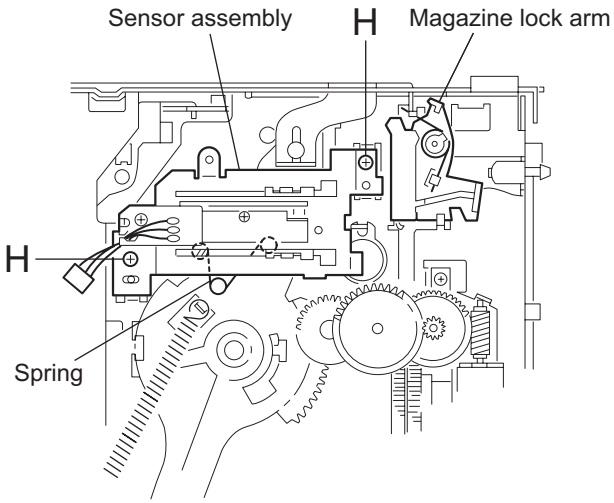


Fig.12

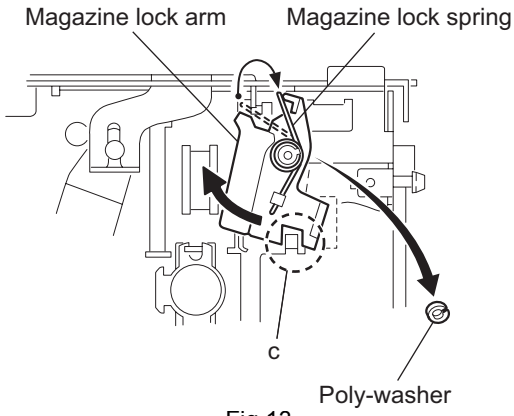


Fig.13

2.4.3 Remove the positioning motor assembly (See fig.14)

(1) Remove the two screws **I** attaching the positioning motor.

ATTENTION:
When removing the positioning motor assembly from chassis, remove the spacer attaching the wires.

(2) Slightly lift the positioning motor assembly to remove it from the two burrs on the chassis.

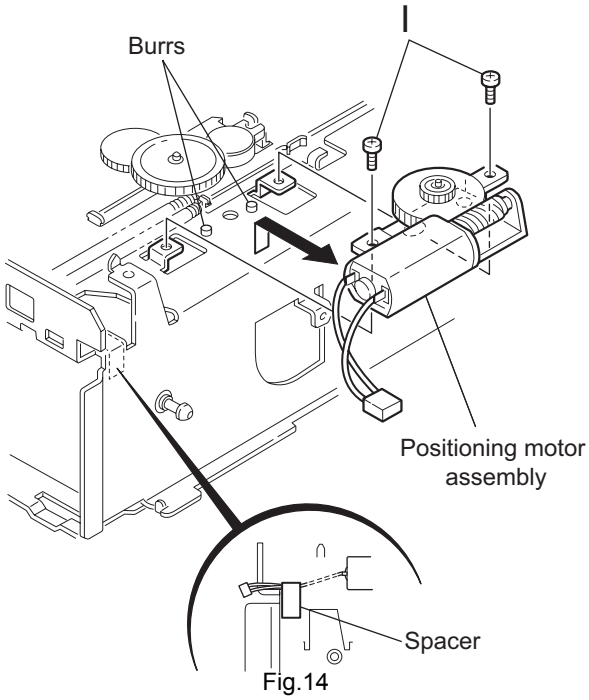


Fig.14

2.4.4 Remove the rear slider (See fig.15)

(1) Position the unit with the front section facing down. Rotate the third gear located on the back of the main unit in the direction of the arrow (clockwise).

(2) Move the rear slider in the direction of the arrow and remove it at the rear slider mounting position (at the widest hole).

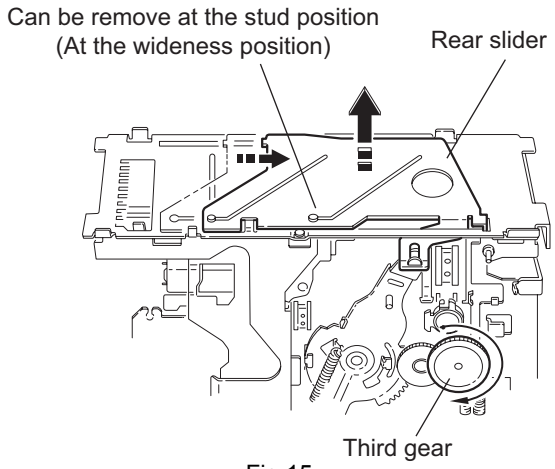


Fig.15

2.4.5 Remove the front slider (See fig.16)

(1) Position the unit with the rear section facing down. Rotate the third gear located on the bottom of the unit in the direction of the arrow (clockwise) until the front slider is moved to the outermost position.

(2) Remove the E-washer attaching the front slider, and remove from the chassis.

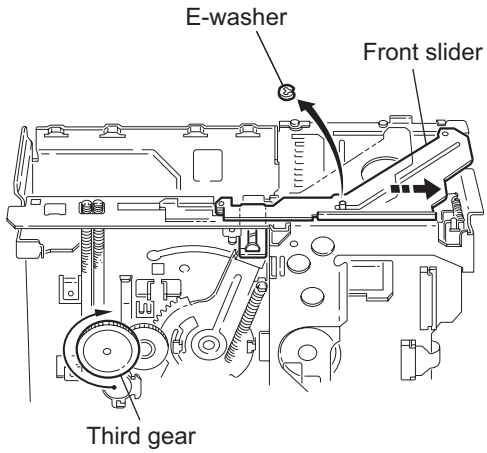


Fig.16

2.4.6 Remove the top plate (See fig.17,18)

(1) Remove the nine screws **J** attaching the top plate.
(2) Disconnect the section **d** attached to the rear of the unit, then lift the top plate slightly.
(3) Move the top plate toward the rear of the unit to remove the upper rod from the top plate.

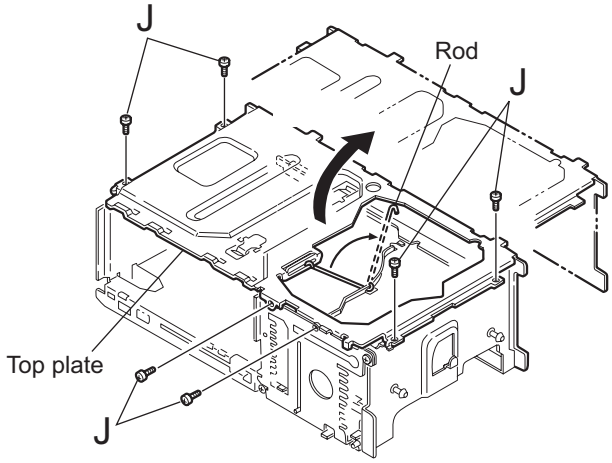


Fig.17

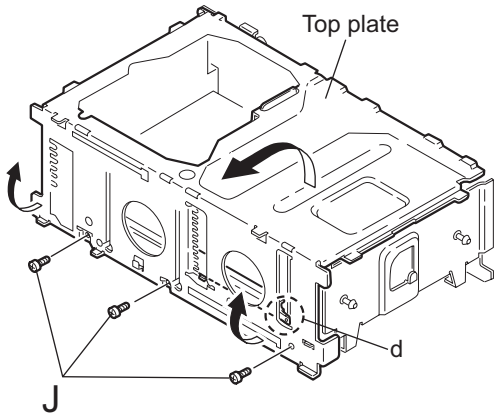


Fig.18

2.4.7 Remove the lifter unit (See fig.19,20)

(1) Remove the elevator spring located on the front side of the unit. (Be sure to first remove the spring from the lifter side as shown in the upper part of the diagram.)

(2) Lift the lifter unit upward, then remove the lower rod to remove the lifter unit from the chassis.

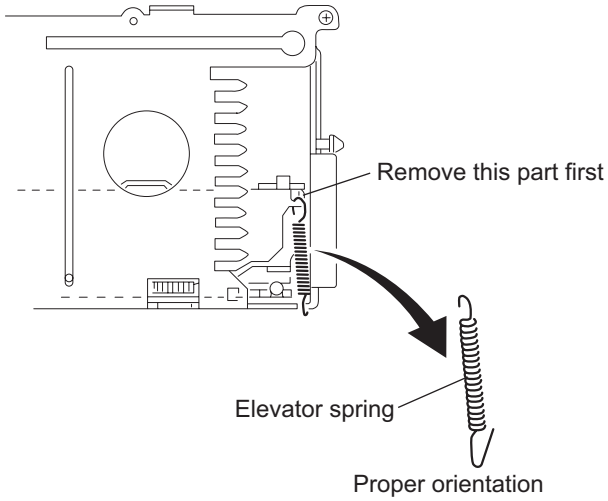


Fig.19

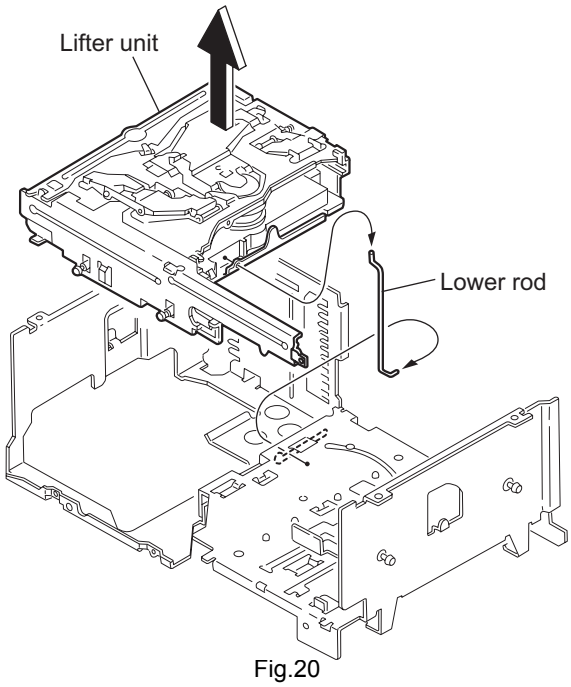


Fig.20

2.4.8 Remove the lifter bracket (See fig.21)

(1) Remove the two screws **K** attaching the lifter bracket from the back of the lifter unit.
(2) Remove the lower rod.

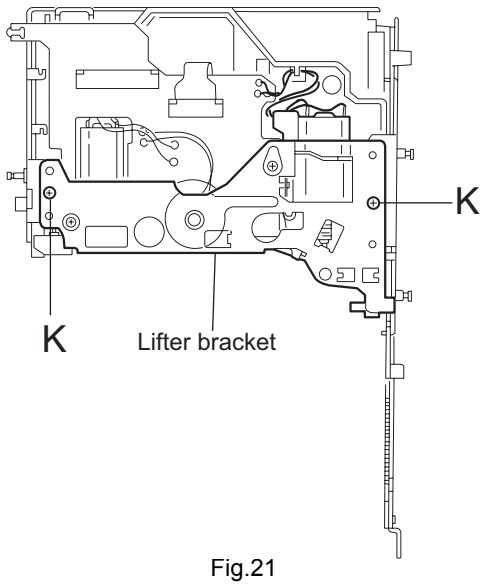


Fig.21

2.4.9 Remove the side bracket and traverse mechanism assenbly (See fig.22)

(1) Remove the two screws **L** attaching the side bracket, and remove the side bracket.
(2) Remove the three shafts on the traverse mechanism assembly from the lifter unit.

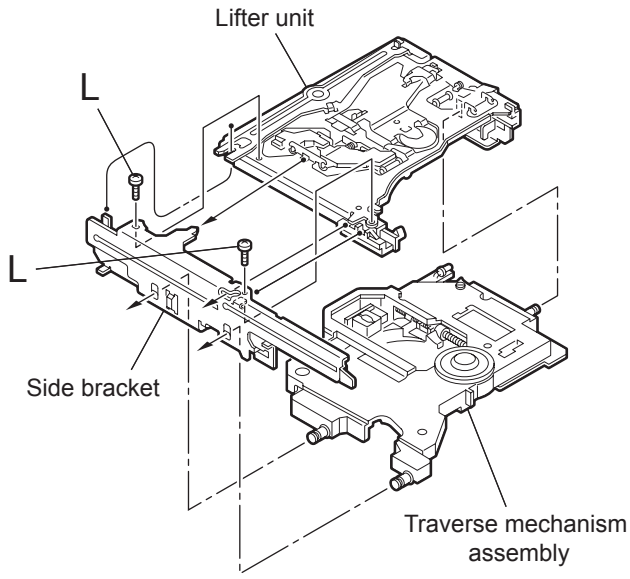


Fig.22

2.4.10 Remove the pickup assembly (See fig.23~26)

CAUTION:

When replacing the flexible wire connected, solder the shorting round point. Otherwise, the pickup may be damaged.

(1) Remove the three screws **M** attaching the mechanism board on the back of the traverse mechanism assembly.
(2) Disconnect the two feed motor wires (blue and white), two spindle motor wires (red and black) and two tray motor wires (brown and black) that are soldered to the mechanism board assembly.
(3) Move and lift mechanism board assembly with the flexible wire attached to connector CN603. Next, solder the sorting round point on the pickup assembly and then disconnect CN603.
(4) Remove the screw **N** attaching the feed motor assembly, and remove.
(5) Remove the screw **O** attaching the shaft holder retaining the feed slide shaft assembly and the middle gear, and remove.
(6) Remove the middle gear.

REFERENCE:

Remove gears and motors only when required.

(7) Move the pickup assembly upward from the gear section and remove it from the traverse chassis assembly.
(8) Remove the two screws **P** attaching the rack arm, and remove.
(9) Pull out the feed slide shaft assembly, and remove.
(10) Remove the screw **Q** attaching the spring, and remove.

CAUTION:

When reassembling, connect the flexible wire from the pickup to the main board and unsolder the shorting round point.

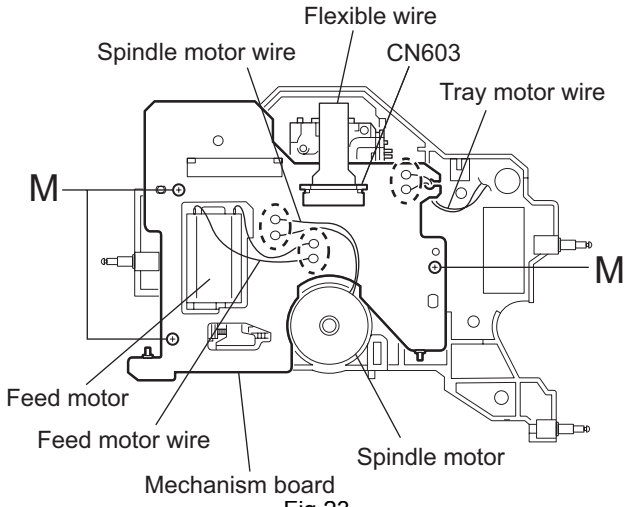


Fig.23

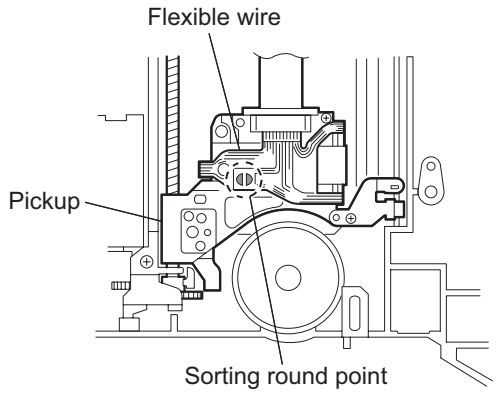


Fig.24

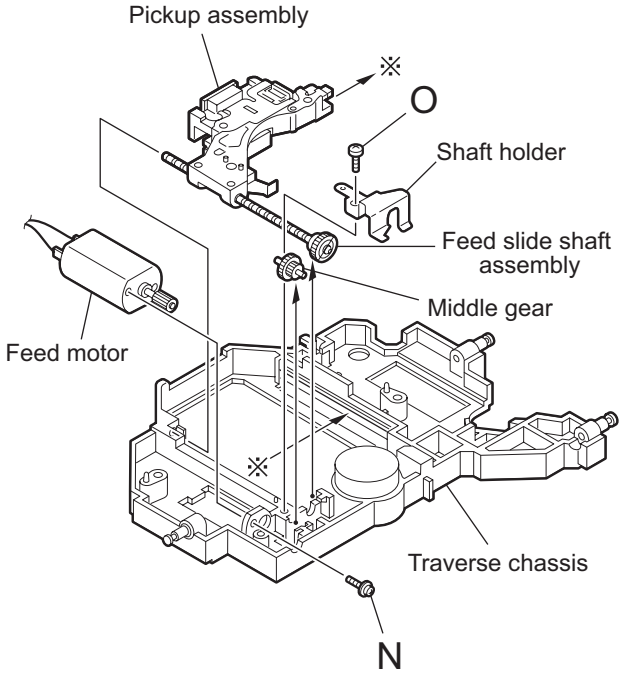


Fig.25

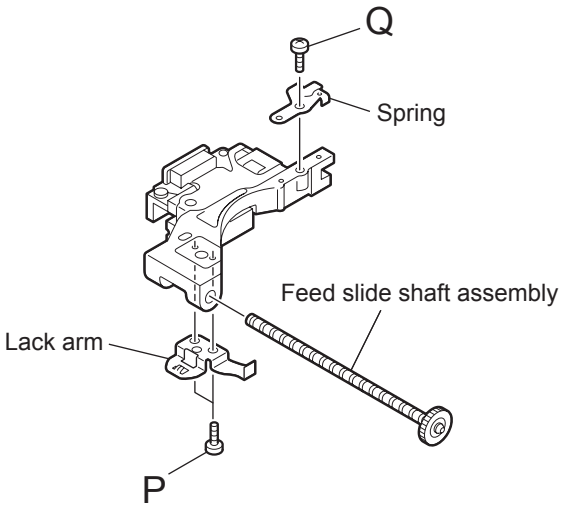


Fig.26

2.4.11 Removing the tray motor assembly (See fig.27, 28)

(1) Remove the two screws **R** attaching the tray motor assembly, and remove.
(2) Remove the two screws **S** attaching the tray motor, and remove the tray motor assembly from the tray motor holder.

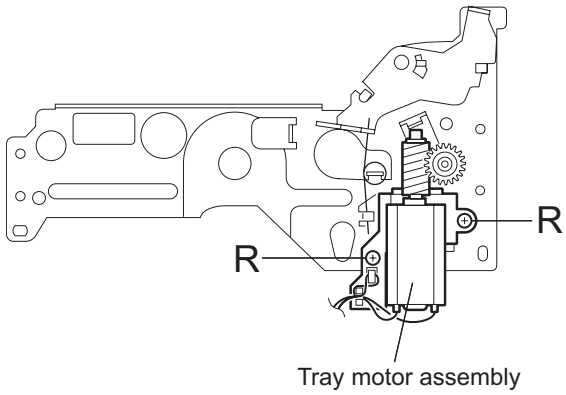


Fig.27

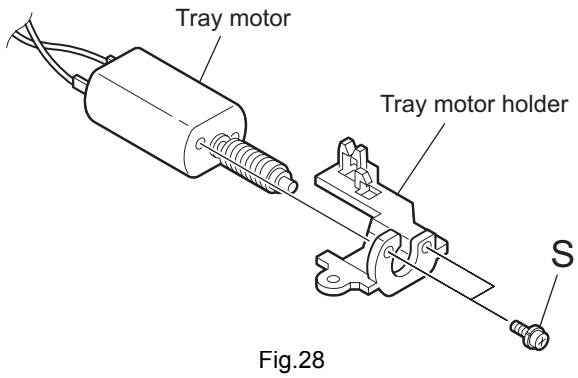


Fig.28

2.4.12 Separation of the chassis (L) assembly and chassis (R) assembly (See fig.29)

(1) Remove the two screws **T** retaining the chassis **(L)** and **(R)** assemblies.
(2) Slide the chassis **(L)** assembly toward the front and detach it, then remove the chassis **(L)** upward.

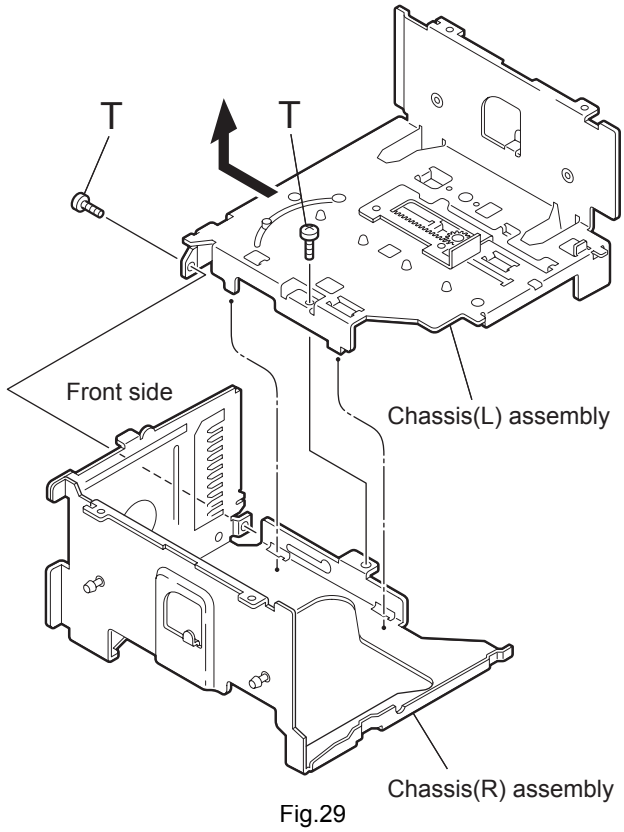


Fig.29

2.5 Precautions reassembling

REFERENCE:

When reassembling, also refer to the disassembling procedures.

2.5.1 Mounting the traverse mechanism assembly (See fig.30~34)

(1) When mounting the pickup assembly, attach the feed slide shaft assembly to the traverse chassis. Apply E-JC-525 grease to the shaft.

(2) Mount the middle gear and the feed slide shaft to the traverse chassis and secure them with the screw **O** through the shaft holder.

(3) Before attaching the mechanism board, move the pickup to the outer edge position, then attach the mechanism board using the screw **M**. At this time, check that the rest switch is correctly placed.

(4) To mount the rack arm, first move the pickup to the middle position and fixing it with the screw **P**.

CAUTION:

When reassembling the mechanism board, reattach the flexible wire to connector CN603 on the mechanism board, and then unsolder the sorting round point. Next, reattach the mechanism board with screw **M**.

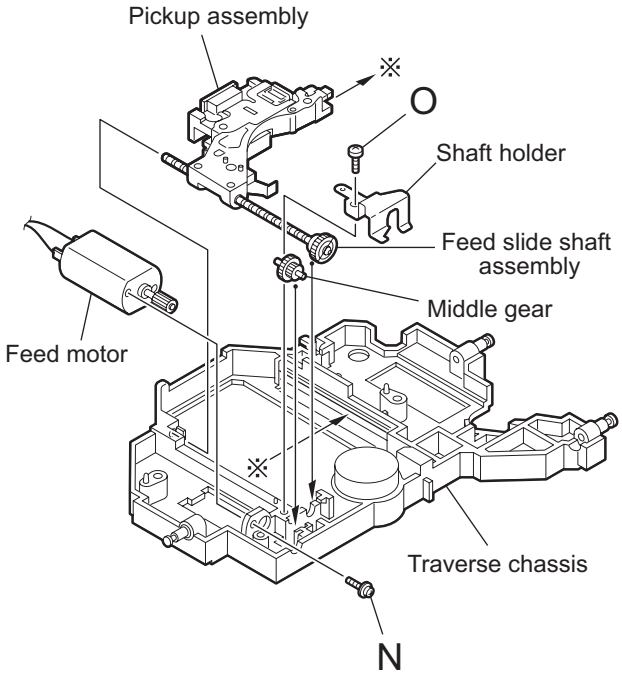


Fig.30

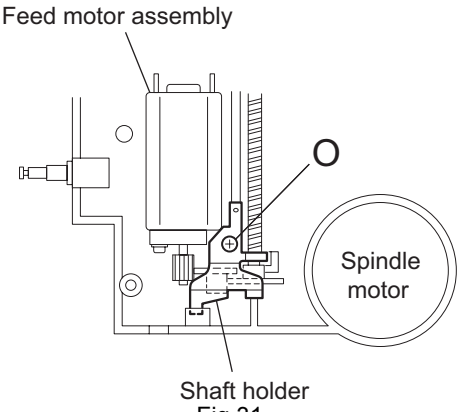


Fig.31

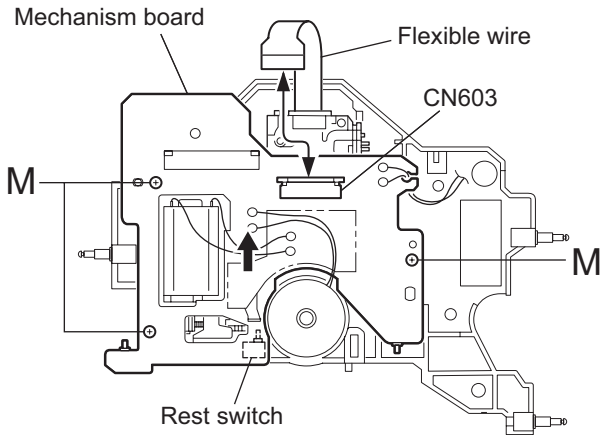


Fig.32

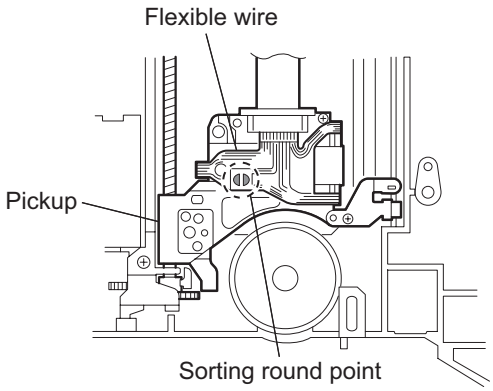


Fig.33

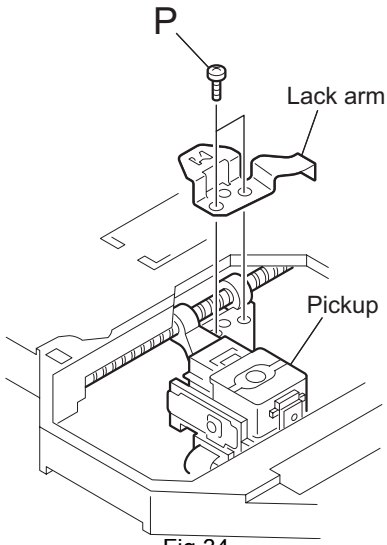


Fig.34

2.5.2 Mounting the lifter unit (See fig.35~37)

(1) Insert the shafts **e** of the traverse mechanism assembly into the slide grooves **f** on the lifter unit.

(2) Move the hook of the lifter unit to the edge, and move the sliding lever inside the side bracket unit to the edge as well.

(3) With each hole and lever shifted to the edge, mount the lifter unit and side bracket unit from the side. (Check each attached section, and check that the joint g of the lifter unit is correctly inserted into the holes **h** of the side bracket unit. After reassembled, check that levers move together.)

(4) Turn the lifter unit upside down.
As shown in Fig. 37, slide the lever 30 mm away from the edge, and then mount the lifter bracket **(L)** assembly.

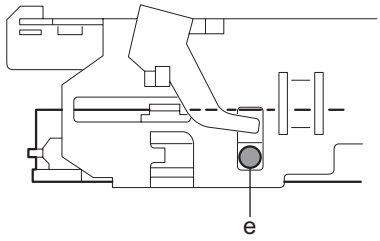


Fig.35

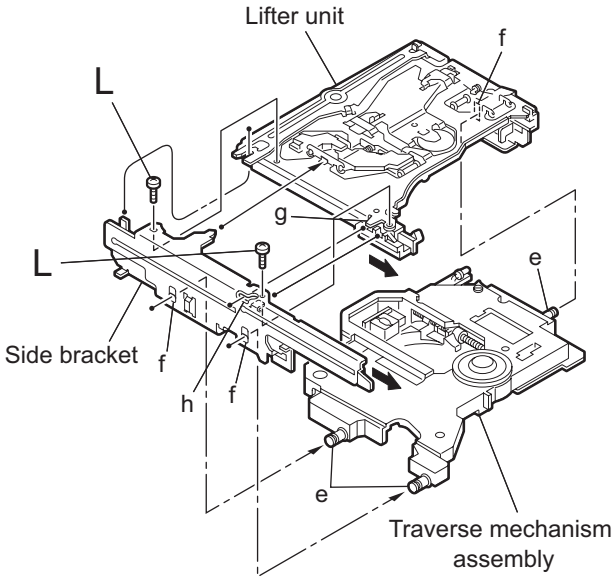


Fig.36

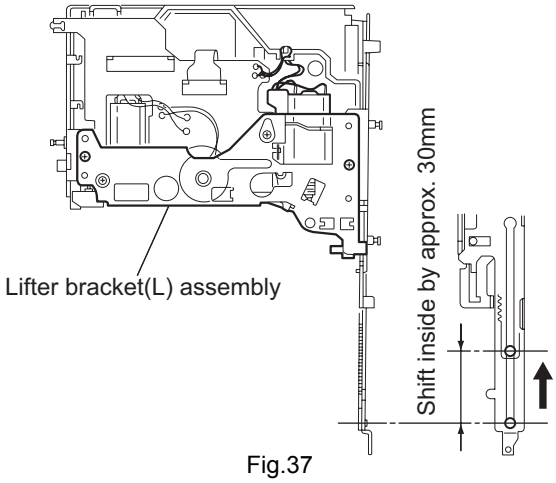


Fig.37

2.5.3 Mounting the chassis (L) assembly and chassis (R) assembly (See fig.38~40)

(1) Attach the lower rod to the chassis **(R)** assembly. While shifting the rod toward the front side, mount the rod on the lifter unit.
With the rod mounted, place the lifter unit on the chassis **(R)** assembly.
(2) Combine the chassis **(L)** and **(R)** assemblies so that the hook section **i** of the chassis **(L)** assembly is inserted into the notch of the chassis **(R)** assembly by sliding it from the front side, and then the two lib **j** jointed to the chassis **(L)** assembly.
(3) After reassembled, fix with the screw **T**.
(4) Attach the elevator spring between the lifter unit and the chassis.

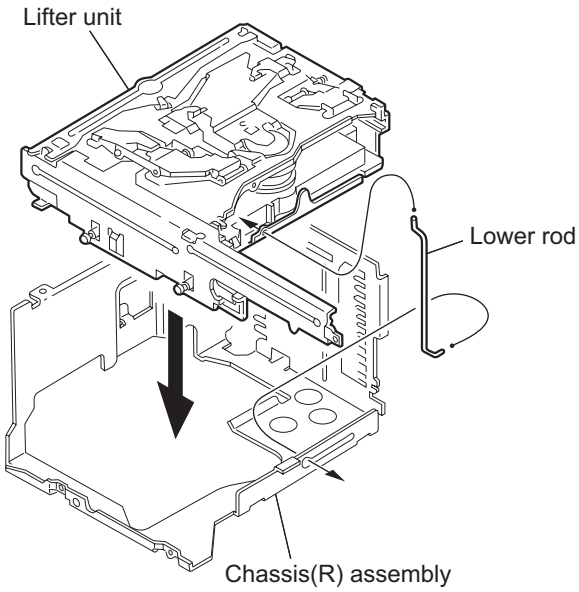


Fig.38

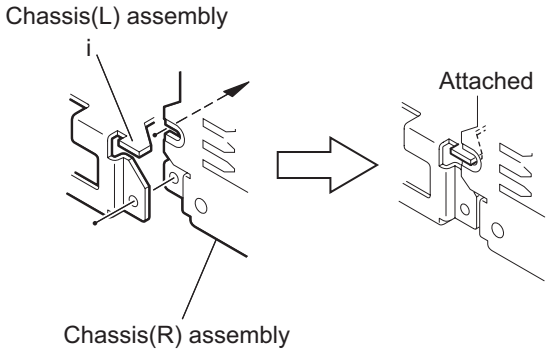


Fig.39

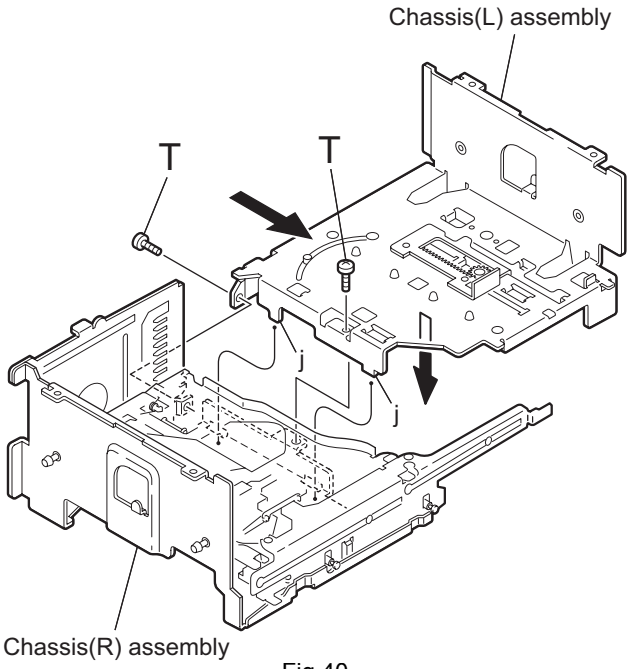


Fig.40

2.5.4 Mounting top plate (See fig.41~44)

(1) Mount the upper rod on the lifter side and set it on the rear of the top plate, then mount the other end of the upper rod to **k** .

(2) Check that the five points **l**, **m**, **n**, **o** and **p** are correctly positioned.
When mounting section **p**, set it so that the bending section of the top plate pinches section **q** of the lifter unit.

(3) Attach the top plate with six screws **J**.

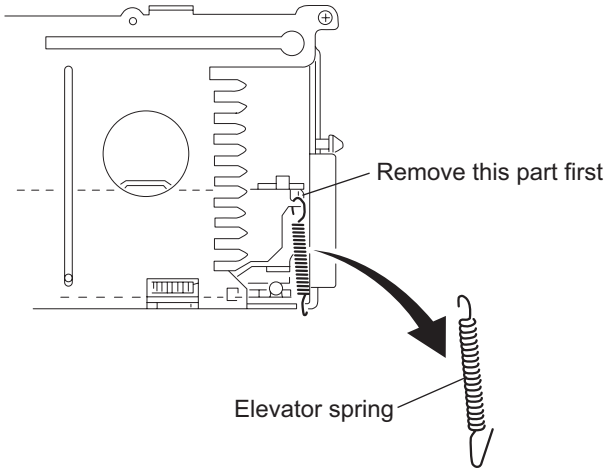


Fig.41

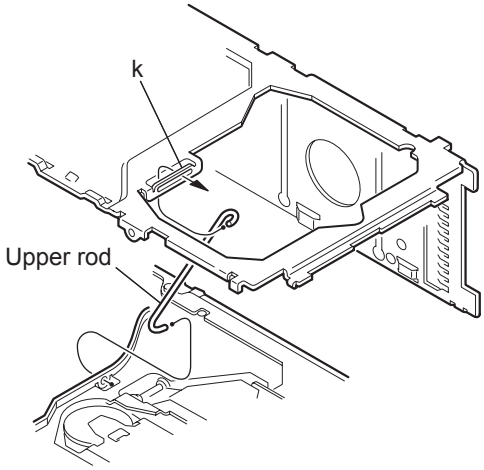


Fig.42

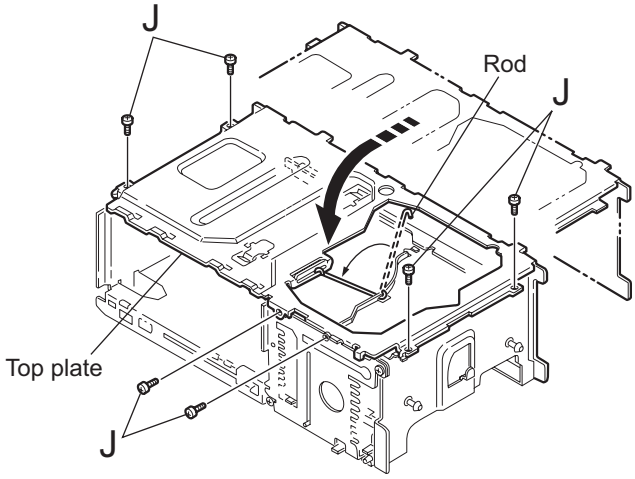


Fig.43

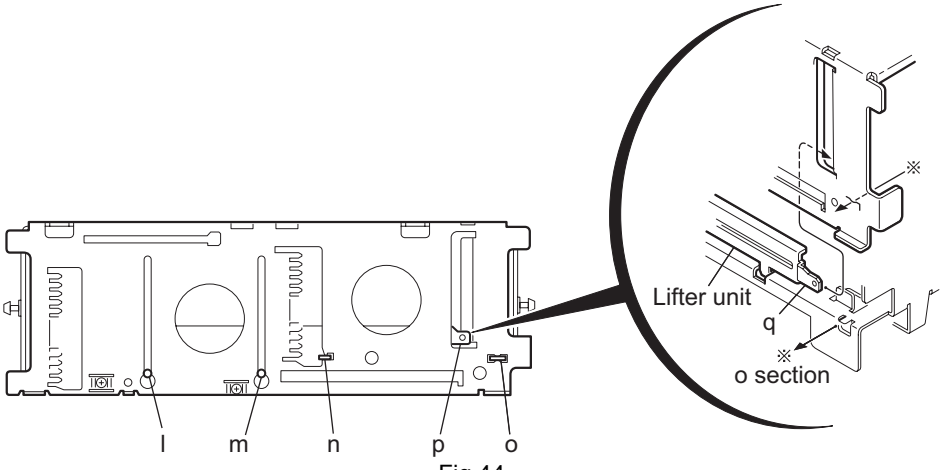
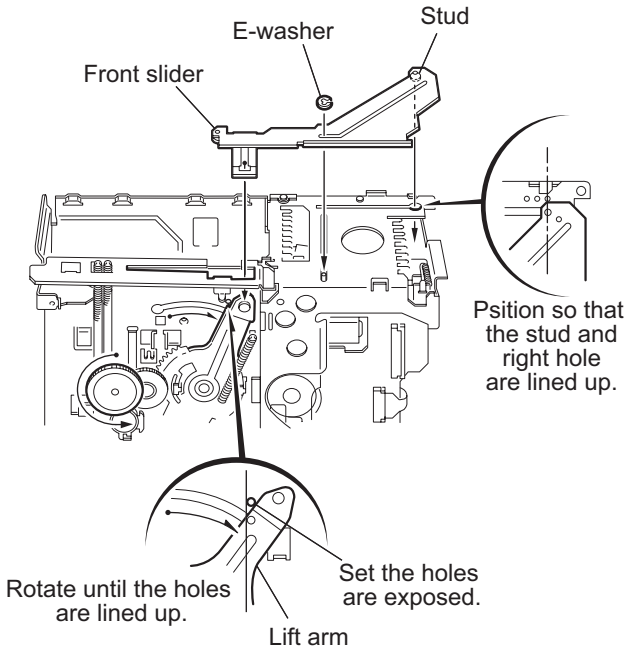


Fig.44

2.5.5 Mounting the front slider and rear slider (See fig.45, 46)

(1) Position the unit with the rear side facing down, then rotate the third gear in the direction of the arrow (clockwise) until the lift arm comes to the position at which the holes are exposed.
(2) Mount the front slider from the top.
Rotate the third gear counterclockwise until the hole of the slider is lined up with the right hole of the stud.
(3) Attach the E-washer on the shaft.
(4) Position the unit with the front side facing down, then mount the rear slider.
Check that the **r**, **s** and t positions are correctly mounted as shown in Fig. 46.
(5) Rotate the third gear in the direction of the arrow (counterclockwise) until the lifter unit is at the top position.


Stud
E-washer
Front slider
Psition so that the stud and right hole are lined up.
Rotate until the holes are lined up.
Set the holes are exposed.
Lift arm
Fig.45

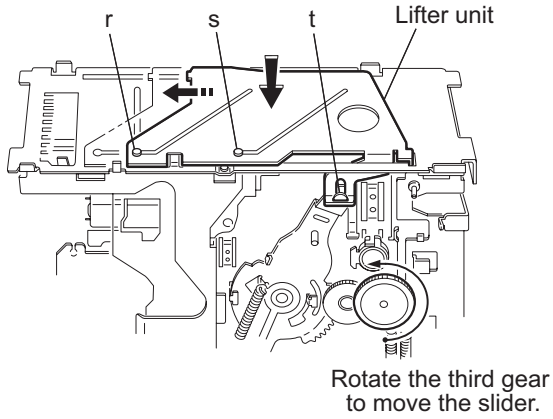


Fig.46

2.5.6 Mounting the sensor board assembly (See fig.47)

(1) Attach the longer spring to the white resin, and attach the shorter spring temporarily to the sensor assembly bracket.
(2) Mount the sensor assembly so that the shaft of the lift arm is inserted into the longer hole on the white resin located on the back of the sensor board assembly.
(3) Attach the shorter spring to the hook of the lift arm.

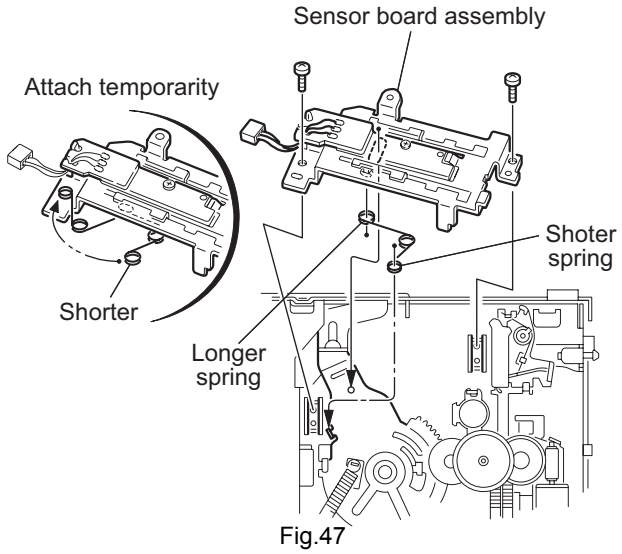


Fig.47

2.5.7 Mounting the main board (See fig.48)

(1) Rotate the third gear clockwise until section **u** of the front slider and the third hole from the right are lined up. (Be sure to set properly. If incorrectly set, the switches on the assembly may be damaged.)
(2) After they are correctly positioned, mount the main board assembly.

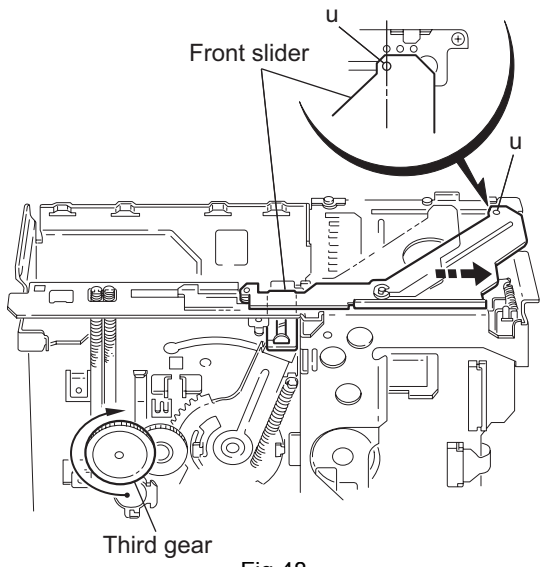


Fig.48

2.5.8 Pickup replacement procedure (See fig.49~55)

(1) Remove the bottom cover, front panel and top cover of the exterior section.
(2) Remove the card wire from the connector CN604 on the mechanism board.
(3) Rotate the rear slider and third gear in the lifter section counterclockwise and then the traverse mechanism assembly is move in the lowermost (bottom) position.
(4) Unsolder the two wires (black and brown) connected to the tray motor.
(5) Remove the two screws **K** from the round holes on the chassis **(R)** assembly to remove the lifter bracket **(L)**.
(6) Remove the lower rod.
(7) Unsolder the two wires (blue and white), two wires of spindle motor (red and black) and wire of tray motor (brown and black) soldered on the mechanism board.
(8) Solder the sorting round point on the pickup assembly to move the mechanism board and then unplug the flexible wire from CN603 on the mechanism board.
(9) Remove the flexible wire from the connector CN603 on the mechanism board.
(10) Remove the three screws **M** from the round hole on the chassis **(R)** assembly, and remove.
(11) Remove the screw **O** attaching pickup shaft holder, and remove the pickup assembly.

CAUTION:

When replacing the pickup, be sure to apply countermeasures against static electricity (grounding the operation table, wrist band and soldering iron). To remove it, first sorting round point on the mechanism board, then lift the mechanism board assembly with CN603 connected. Next, sorting round point on the pickup main unit, then unplug the pickup flexible board from connector CN603.

ATTENTION:

When reassembling, perform in the reverse order.

(12) Remove the two screws **P** attaching lack arm. Pull out the feed slide shaft assembly. Remove the screw **Q** attaching shaft holder.
(13) When mounting the lifter bracket after replacing the pickup, move the lifter unit lever approx. 30mm towards the inside and then mount the lifter bracket.

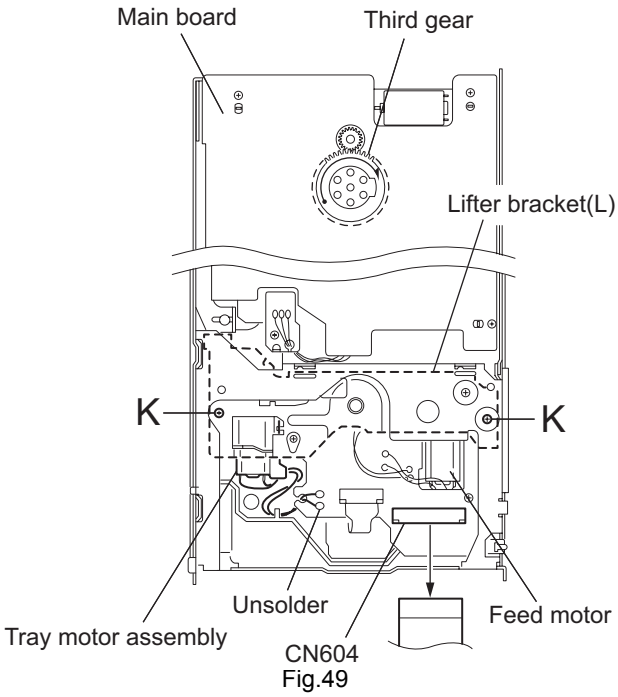


Fig.49

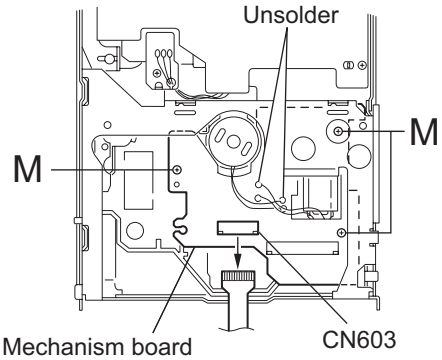


Fig.50

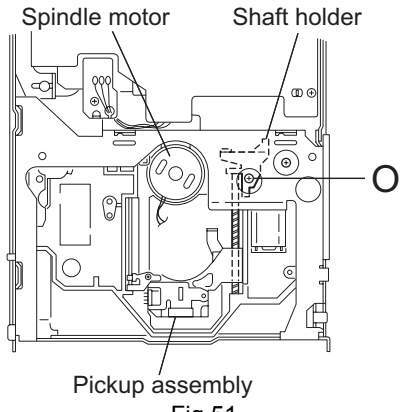


Fig.51

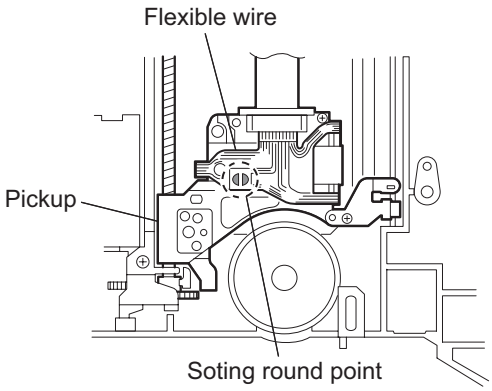


Fig.52

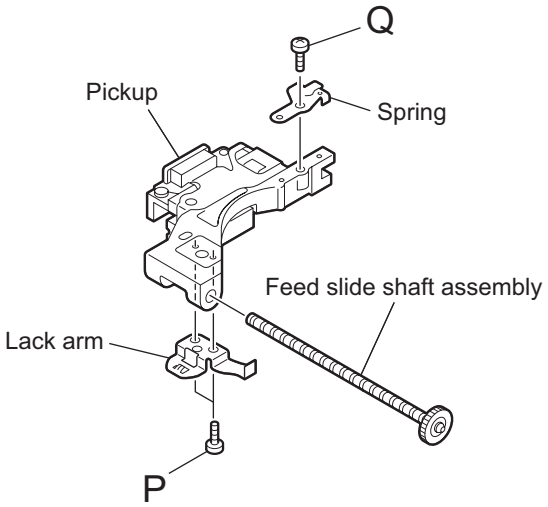


Fig.53

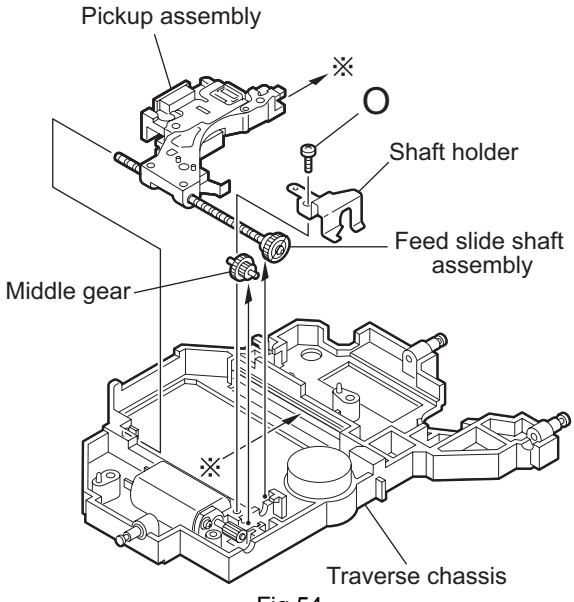


Fig.54

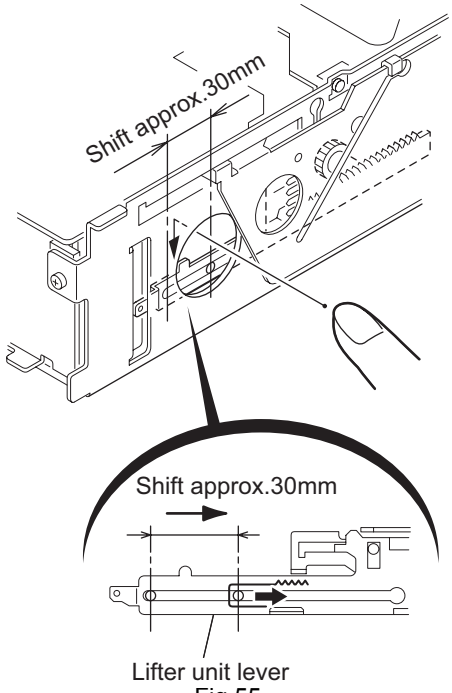
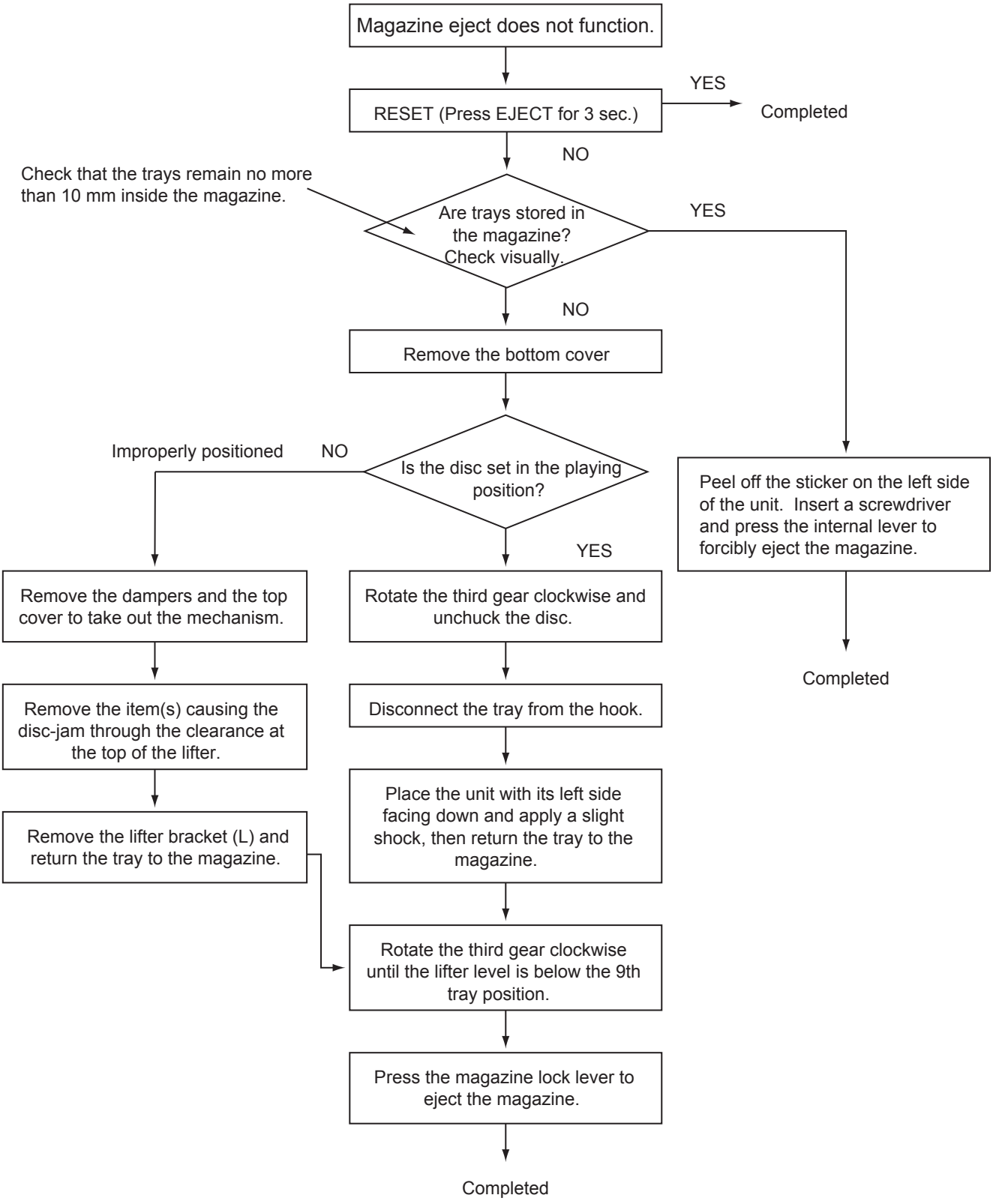


Fig.55

SECTION 3
Adjustment method

3.1 Forced eject procedures


Magazine eject does not function.
RESET (Press EJECT for 3 sec.)
YES
Completed
NO
Check that the trays remain no more than 10 mm inside the magazine.
Are trays stored in the magazine? Check visually.
YES
NO
Remove the bottom cover
Improperly positioned
NO
Is the disc set in the playing position?
YES
Peel off the sticker on the left side of the unit. Insert a screwdriver and press the internal lever to forcibly eject the magazine.
Completed
Remove the dampers and the top cover to take out the mechanism.
Rotate the third gear clockwise and unchuck the disc.
Remove the item(s) causing the disc-jam through the clearance at the top of the lifter.
Disconnect the tray from the hook.
Remove the lifter bracket (L) and return the tray to the magazine.
Place the unit with its left side facing down and apply a slight shock, then return the tray to the magazine.
Rotate the third gear clockwise until the lifter level is below the 9th tray position.
Press the magazine lock lever to eject the magazine.
Completed

3.2 Troubleshooting

3.2.1 Servicing procedures for CH-X1500 error displays

Error display — **Servicing procedure**

E1: Eject error

The magazine cannot be ejected until S601 (magazine switch) turns off.
Can the magazine be ejected? YES→1, NO→ 2
1 The magazine switch (S601) does not turn off even though the magazine is completely ejected.
2 Check that the magazine is not engaged with the mechanism assembly.

E2: Position motor error

The lifter does not move up and down when exchanging or ejecting discs.
After resetting, check whether or not the lifter moves.YES→ 3, NO→4
3 If the lifter exceeds the required disc position, check the lift position input. (IC601 pin 76)
If the lifter does not reach the required disc position, check the mechanism (mainly the lifter elevation mechanism)
4 Check that voltage is present at the motor terminal.
If voltage is present, check the lifter elevation mechanism. If voltage is not present, separate the motor from the circuit and check again whether or not voltage is present.
If voltage is present, next check that the armature resistance of the position motor (resistance between motor terminals) is approx. 12Ω .
If the resistance is excessively low (1 - 2Ω), the motor is defective.

E3: Tray motor error

Trays cannot be opened or closed when exchanging or ejecting discs.
Does the tray move when changing or ejecting discs?YES→5, NO→ 6
5 Check that TRAY OUT SW (S602) and TRAY IN SW (S603) function correctly.

	S602 & IC601 pin (46)	S603 & IC601 pin (45)
When opening	H	L
When closing	L	H

6 Check that the drive voltage is applied to the motor terminal.
If the voltage is present, check the tray mechanism.
If the voltage is not present, separate the motor from the circuit and check again whether or not the voltage is present.

E4: Pick returning error

Does the feed (pickup unit) return to the inner area of the disc when ejecting?
YES→7, NO→8, 9
7 Check the rest switch.
8 If the feed gear is rotated, check the feed transfer mechanism
9 If the feed gear is not rotated, check the motor driver and the pattern.

Other errors occurring in the receiver or controller.

E8: Connection error

When selecting the CD Changer mode using function keys, etc., the unit does not enter the CD changer mode, or the E8 error display appears. This signifies trouble relating to communications.
a Check the connection cables between the CD changer and the receiver (CD changer controller).
b Check the CD changer power cord and the fuse (including F901 on the PC board).
c Check IC651 and its peripheral circuits.

★ The E1 ~ E8 error displays described above may appear as E-1 ~ E-8, 1E1 ~1E8, R-1 ~ R-8, or RST1 ~ RST8, depending on the product.

3.2.2 CH-X1500 Error code

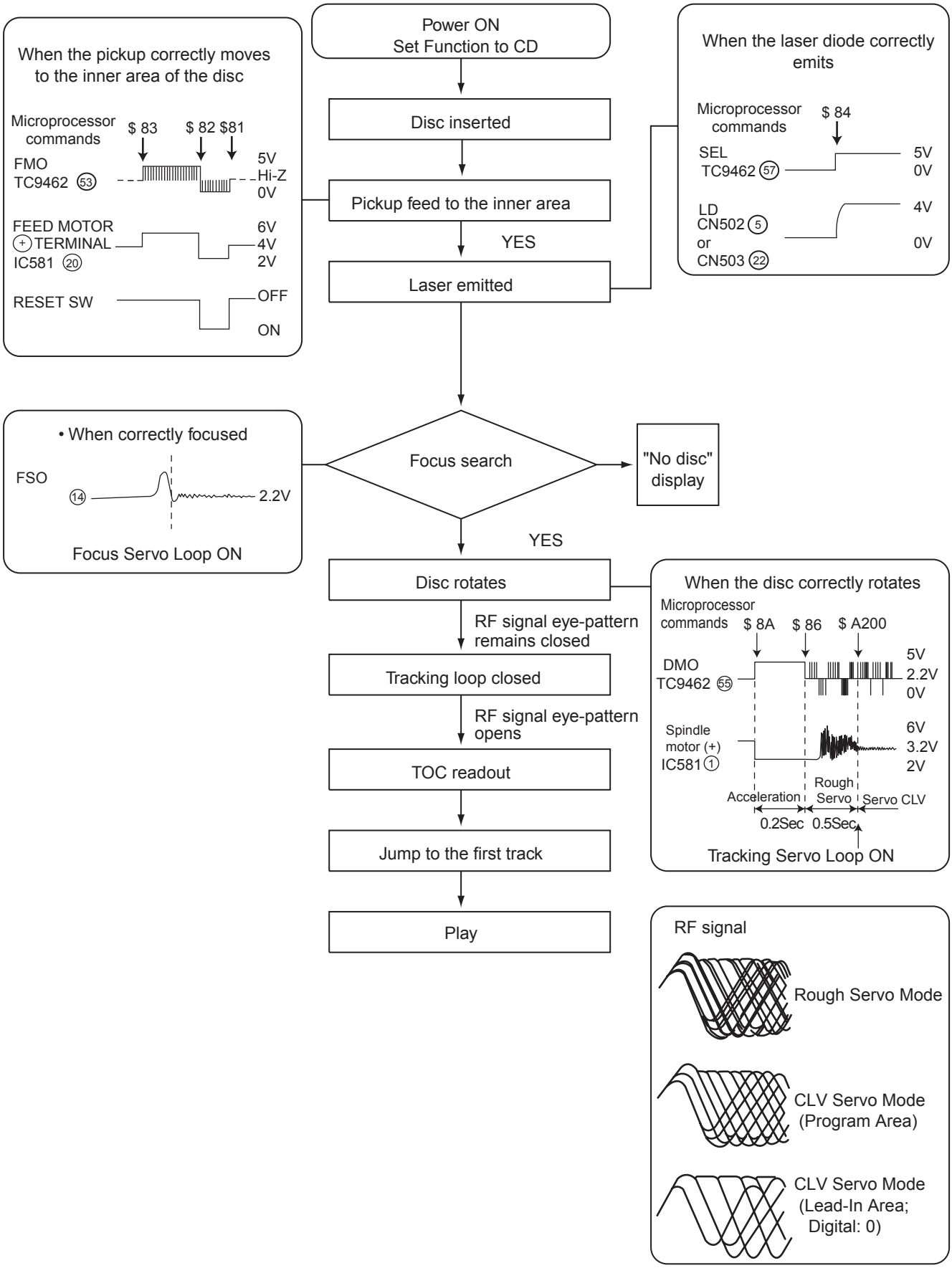
The following error codes can be displayed and stored in up to 3 memories when the KD-MX3000 is used with the controller. Refer to the KD-MX3000 service manual regarding error code indication.
The error code indication when using the earlier controller is the same as the CH-X99,KD-MK88 and other 12CD changer models.

CH-1 error code table

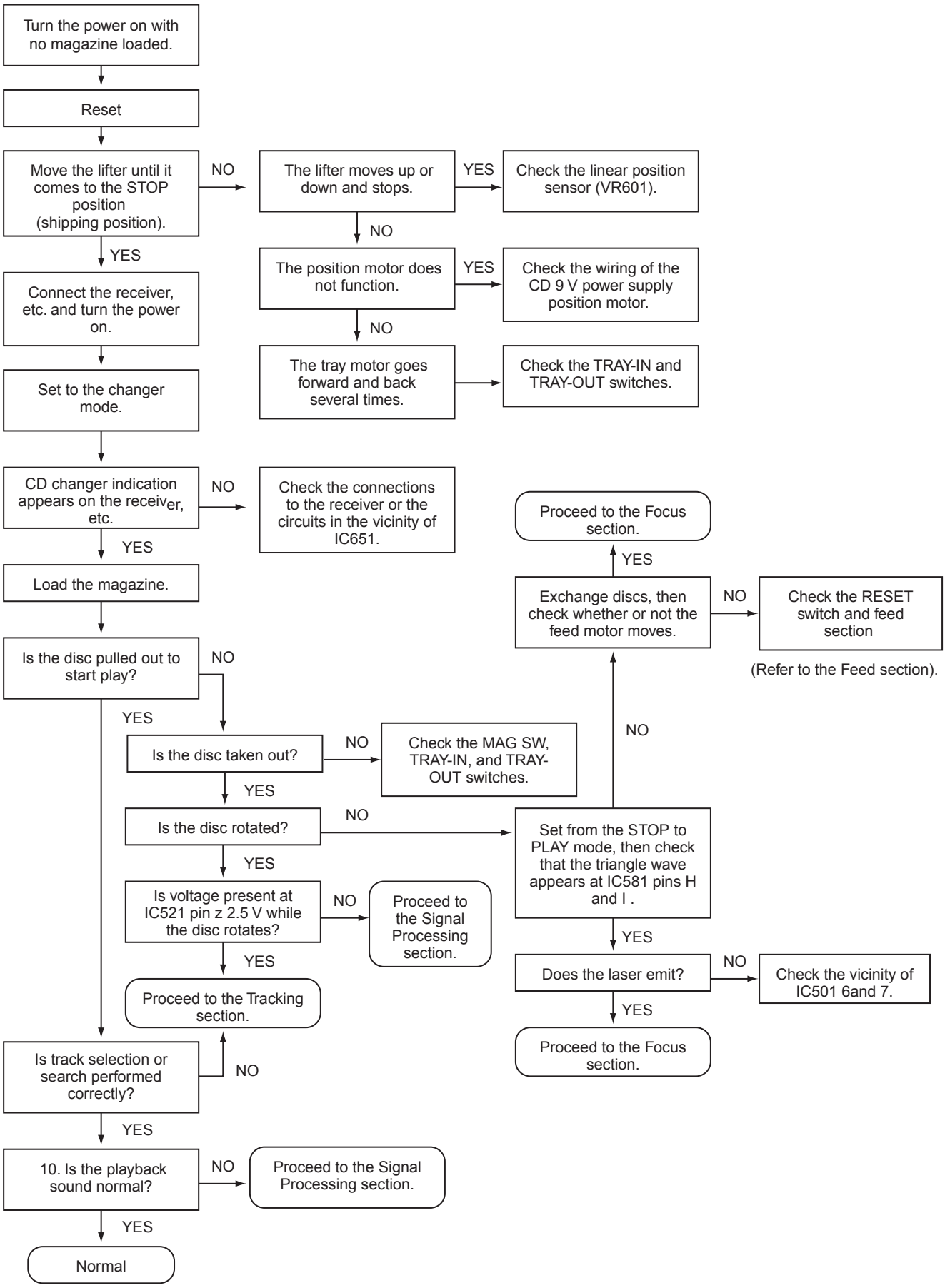
Generating condition		Description	Error code
Tray extension error	Tray-in switch time out (Tray-in switch Low Tray-out switch High)	Tray stops part way	E1 03 00 11
	Tray-out switch time out (Tray-in switch High Tray-out switch High)	Tray stops part way	E1 03 00 12
	Tray-in switch time out (Tray-in switch Low Tray-out switch Low)	Tray-in switch faulty or other defect	E1 03 00 13
	MAG-in switch Low to High	Magazine removed when tray partly extende	E1 03 00 14
Tray retraction error	Tray-in switch time out (Tray-in switch Low Tray-out switch Low)	Tray motor inoperative	E1 03 00 16
	Tray-out switch time out (Tray-in switch High Tray-out switch High)	Tray retraction stops part way	E1 03 00 17
	Tray-in switch time out (Tray-in switch Low Tray-out switch Low)	Tray-in switch faulty or other defect	E1 03 00 18
	MAG-in switch Low to High	Magazine removed when tray partly retracted	E1 03 00 19
Lifter raise error	Wait position time out	Position motor inoperative	E1 02 00 21
	Wait position time out	Position not stable in fine adjust mode	E1 02 00 22
	Wait position time out	Other fault	E1 02 00 23
Lifter lower error	Wait position time out	Position motor inoperative	E1 02 00 26
	Wait position time out	Position not stable in fine adjust mode	E1 02 00 27
	Wait position time out	Other fault	E1 02 00 28
Chuck error	Play position time out	Position motor inoperative	E1 02 00 31
	Play position time out	Position not stable in fine adjust mode	E1 02 00 32
	Play position time out	Other fault	E1 02 00 33
Unchuck error	Wait position time out	Position motor inoperative	E1 02 00 36
	Wait position time out	Position not stable in fine adjust mode	E1 02 00 37
	Wait position time out	Other fault	E1 02 00 38
Eject error	Eject position time out	Position motor inoperative	E1 02 00 41
	Eject position time out	Eject position not attained	E1 02 00 42
	MAG in switch time out	Magazine not ejected	E1 02 00 43
Initialize error	Mechanism switch time out	Both Tray-in and Tray-out Low	E1 03 00 46
	Absolute position time out	Not stable at absolute position	E1 03 00 47

Note:
The 1st error code is indicated by E1, while the 2nd and 3rd error codes are respectively indicated by E2 and E3.

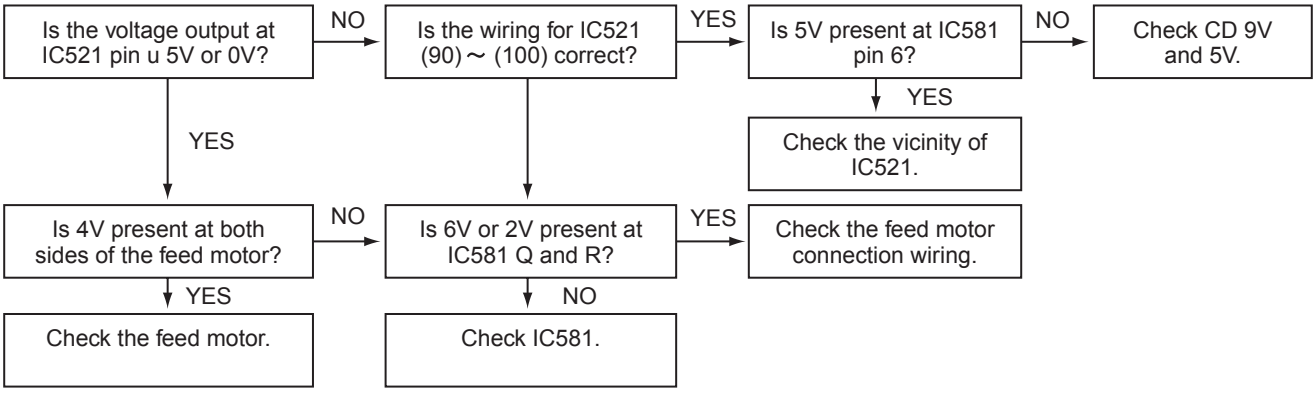
3.3 Flow of functional operation until TOC read



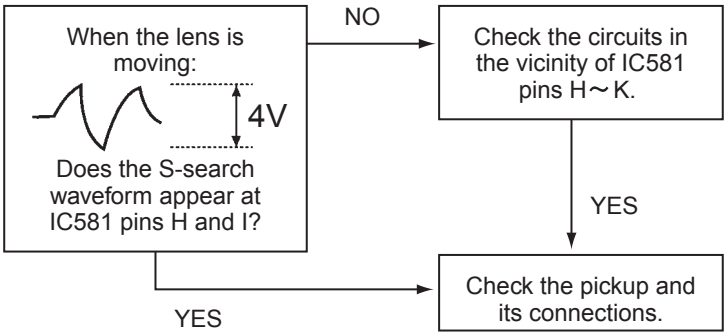
3.3.1 General section


Turn the power on with no magazine loaded.
Reset
Move the lifter until it comes to the STOP position (shipping position).
NO
The lifter moves up or down and stops.
YES
Check the linear position sensor (VR601).
NO
YES
The position motor does not function.
YES
Check the wiring of the CD 9 V power supply position motor.
NO
Connect the receiver, etc. and turn the power on.
The tray motor goes forward and back several times.
Check the TRAY-IN and TRAY-OUT switches.
Set to the changer mode.
CD changer indication appears on the receiver, etc.
NO
Check the connections to the receiver or the circuits in the vicinity of IC651.
YES
Load the magazine.
Is the disc pulled out to start play?
NO
YES
Is the disc taken out?
NO
Check the MAG SW, TRAY-IN, and TRAY-OUT switches.
YES
Is the disc rotated?
NO
Set from the STOP to PLAY mode, then check that the triangle wave appears at IC581 pins H and I .
YES
Is voltage present at IC521 pin z 2.5 V while the disc rotates?
NO
Proceed to the Signal Processing section.
YES
Proceed to the Tracking section.
Is track selection or search performed correctly?
NO
YES
10. Is the playback sound normal?
NO
Proceed to the Signal Processing section.
YES
Normal
YES
Does the laser emit?
NO
Check the vicinity of IC501 6and 7.
YES
Proceed to the Focus section.
Proceed to the Focus section.
YES
Exchange discs, then check whether or not the feed motor moves.
NO
Check the RESET switch and feed section
(Refer to the Feed section).
NO

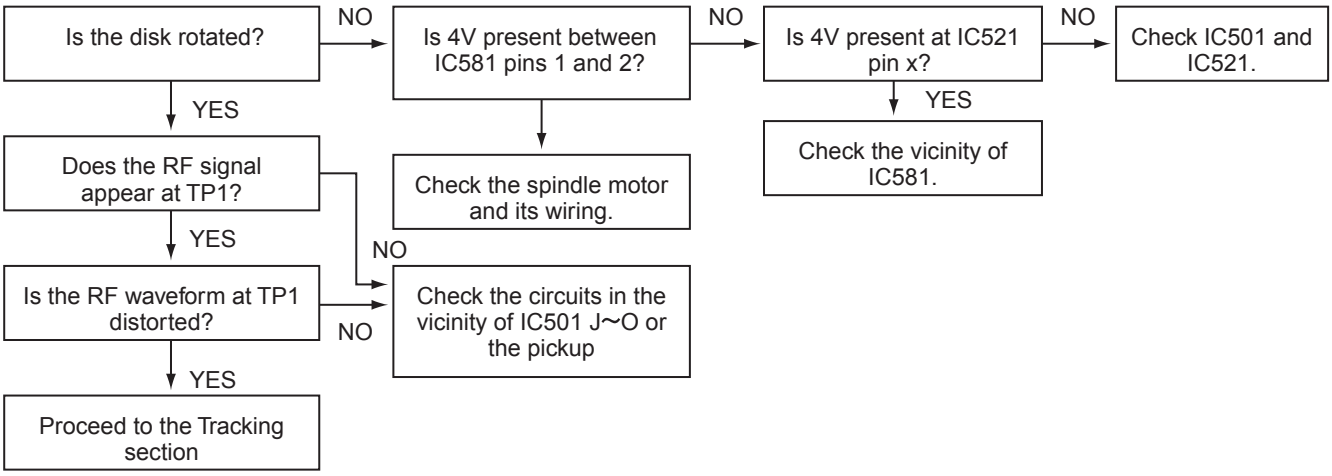
3.3.2 Feed section


Is the voltage output at IC521 pin u 5V or 0V?
NO
Is the wiring for IC521 (90)～(100) correct?
YES
Is 5V present at IC581 pin 6?
NO
Check CD 9V and 5V.
YES
Check the vicinity of IC521.
YES
Is 4V present at both sides of the feed motor?
NO
Is 6V or 2V present at IC581 Q and R?
YES
Check the feed motor connection wiring.
YES
NO
Check the feed motor.
Check IC581.

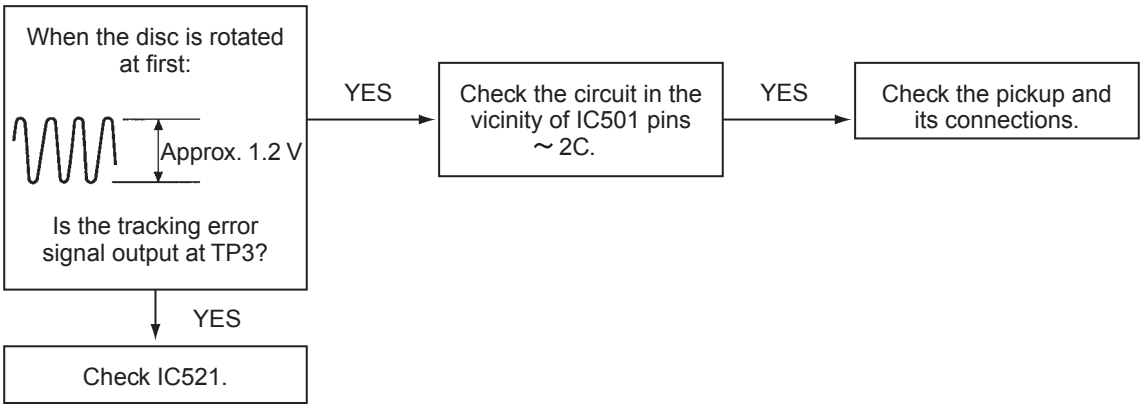
3.3.3 Focus section


When the lens is moving:
4V
Does the S-search waveform appear at IC581 pins H and I?
NO
Check the circuits in the vicinity of IC581 pins H～K.
YES
Check the pickup and its connections.
YES

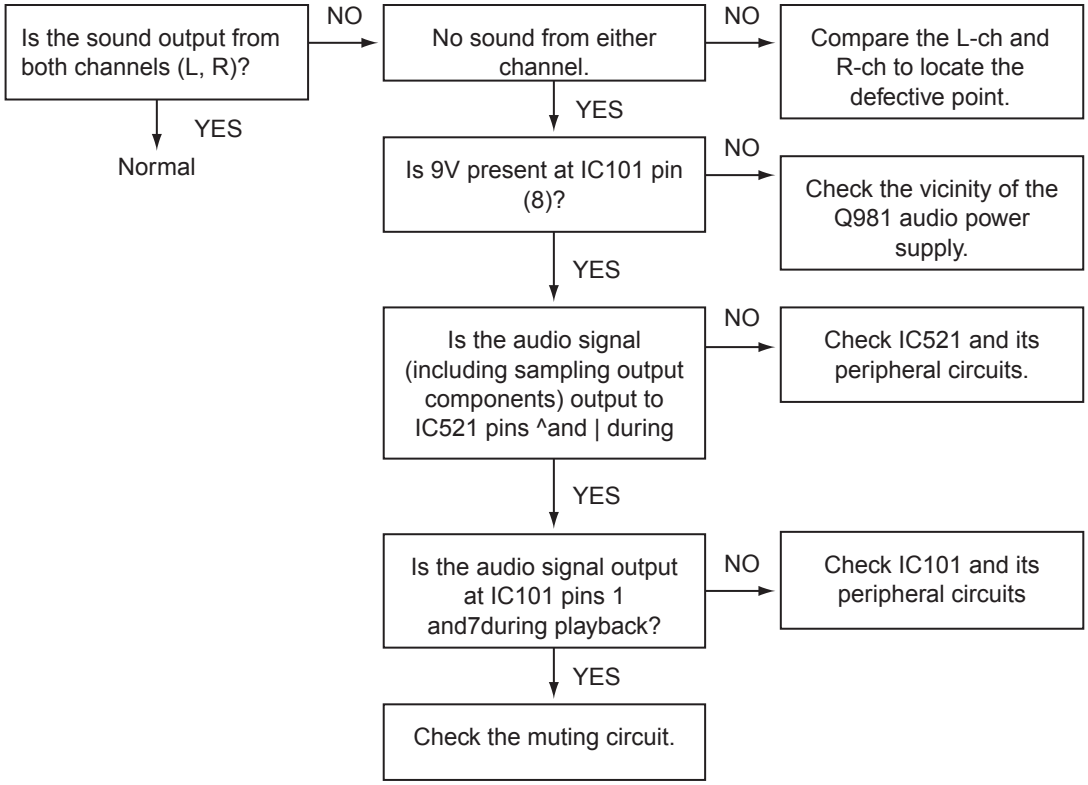
3.3.4 Spindle section


Is the disk rotated?
NO
Is 4V present between IC581 pins 1 and 2?
NO
Is 4V present at IC521 pin x?
NO
Check IC501 and IC521.
YES
Check the vicinity of IC581.
YES
Does the RF signal appear at TP1?
Check the spindle motor and its wiring.
YES
NO
Is the RF waveform at TP1 distorted?
NO
Check the circuits in the vicinity of IC501 J～O or the pickup
YES
Proceed to the Tracking section

3.3.5 Tracking section


When the disc is rotated at first:
Approx. 1.2 V
Is the tracking error signal output at TP3?
YES
Check the circuit in the vicinity of IC501 pins ～2C.
YES
Check the pickup and its connections.
YES
Check IC521.

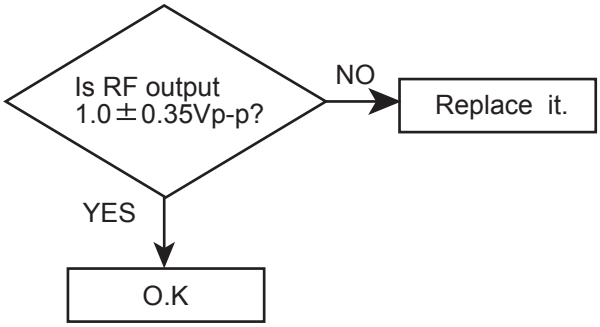
3.3.6 Signal processing section


Is the sound output from both channels (L, R)?
NO
No sound from either channel.
NO
Compare the L-ch and R-ch to locate the defective point.
YES
Normal
YES
Is 9V present at IC101 pin (8)?
NO
Check the vicinity of the Q981 audio power supply.
YES
Is the audio signal (including sampling output components) output to IC521 pins ^and | during
NO
Check IC521 and its peripheral circuits.
YES
Is the audio signal output at IC101 pins 1 and7during playback?
NO
Check IC101 and its peripheral circuits
YES
Check the muting circuit.

3.4 Maintenance of laser pickup

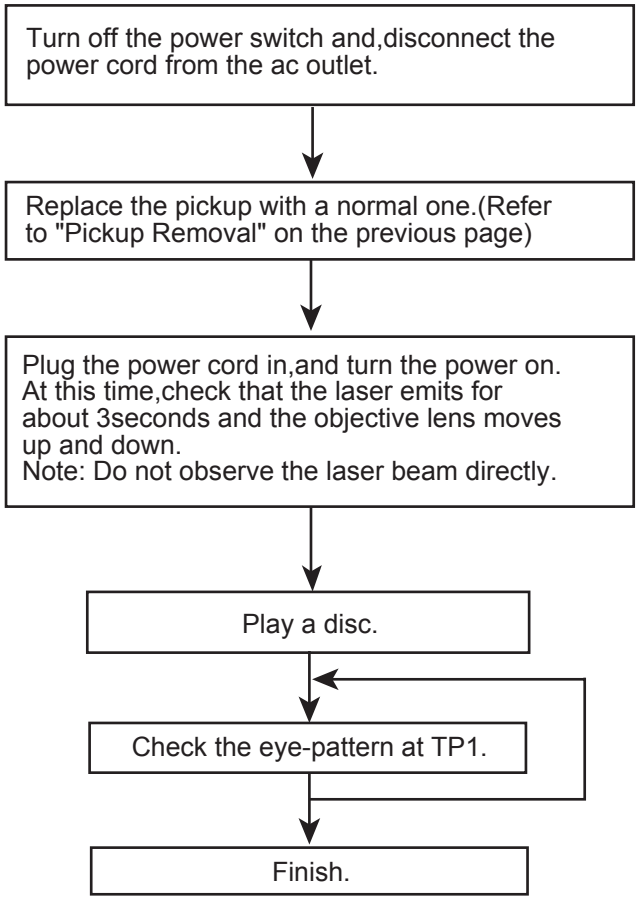
(1) Cleaning the pick up lens
Before you replace the pick up, please try to clean the lens with a alcohol soaked cotton swab.

(2) Life of the laser diode
When the life of the laser diode has expired,the following symptoms will appear.
- The level of RF output (EFM output:ampli tude of eye pattern) will be low.



(3) Semi-fixed resistor on the APC PC board
The semi-fixed resistor on the APC printed circuit board which is attached to the pickup is used to adjust the laser power.Since this adjustment should be performed to match the characteristics of the whole optical block, do not touch the semi-fixed resistor. If the laser power is lower than the specified value,the laser diode is almost worn out, and the laser pickup should be replaced. If the semi-fixed resistor is adjusted while the pickup is functioning normally,the laser pickup may be damaged due to excessive current.

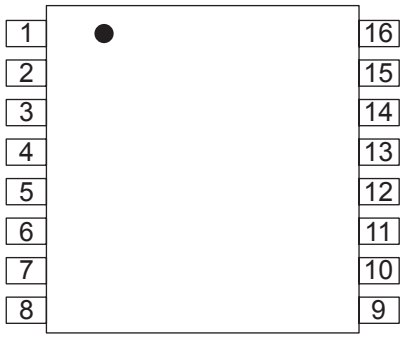
3.5 Replacement of laser pickup


Turn off the power switch and,disconnect the power cord from the ac outlet.
Replace the pickup with a normal one.(Refer to "Pickup Removal" on the previous page)
Plug the power cord in,and turn the power on. At this time,check that the laser emits for about 3seconds and the objective lens moves up and down.
Note: Do not observe the laser beam directly.
Play a disc.
Check the eye-pattern at TP1.
Finish.

SECTION 4
Description of major ICs

4.1 AK4381VT-X (IC121) : 2ch DAC

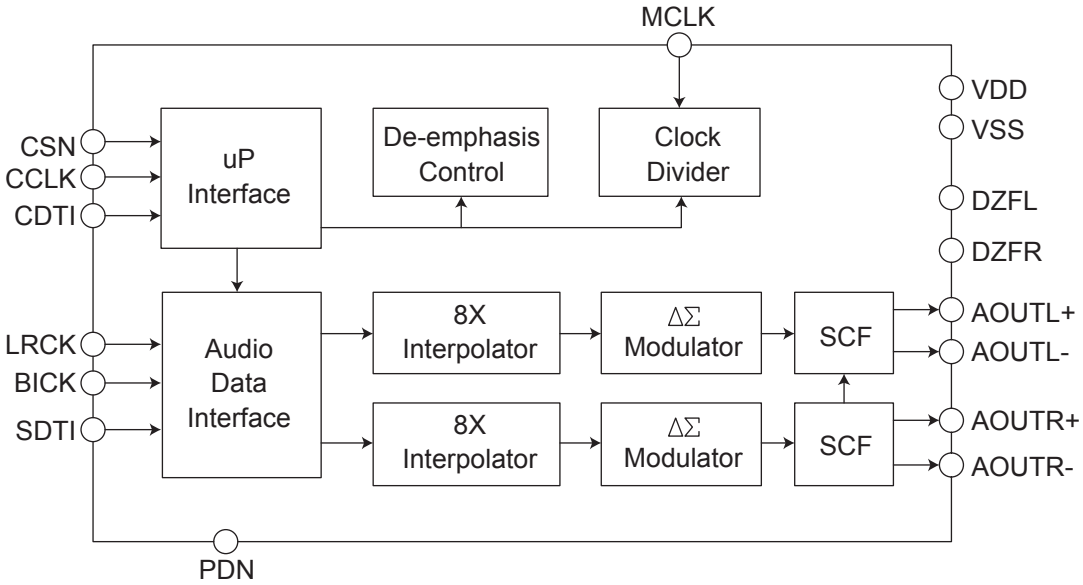
• Pin layout



• Pin functions

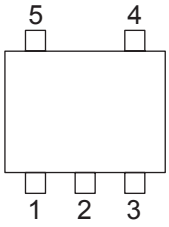
Pin No	Symbol	Function
1	MCLK	Master clock input pin
2	BICK	Audio serial data clock pin
3	SDTI	Audio serial data input pin
4	LRCK	L/R clock pin
5	PDN	Power-Down mode pin
6	CSN	Chip select pin
7	CCLK	Control data input pin
8	CDTI	Control data input pin
9	AOUTR-	Rch negative analog output pin
10	AOUTR+	Rch positive analog output pin
11	AOUTL-	Lch negative analog output pin
12	AOUTL+	Lch positive analog output pin
13	VSS	Ground pin
14	VDD	Power supply pin
15	DZFR	Rch data zero input detect pin
16	DZFL	Lch data zero input detect pin

• Block diagram

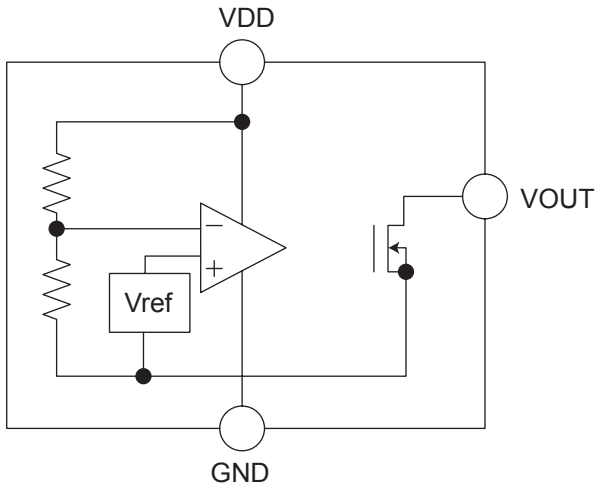


4.2 DB4833FVE-W (IC502) : Voltage detector

• Pin layout



• Block diagram

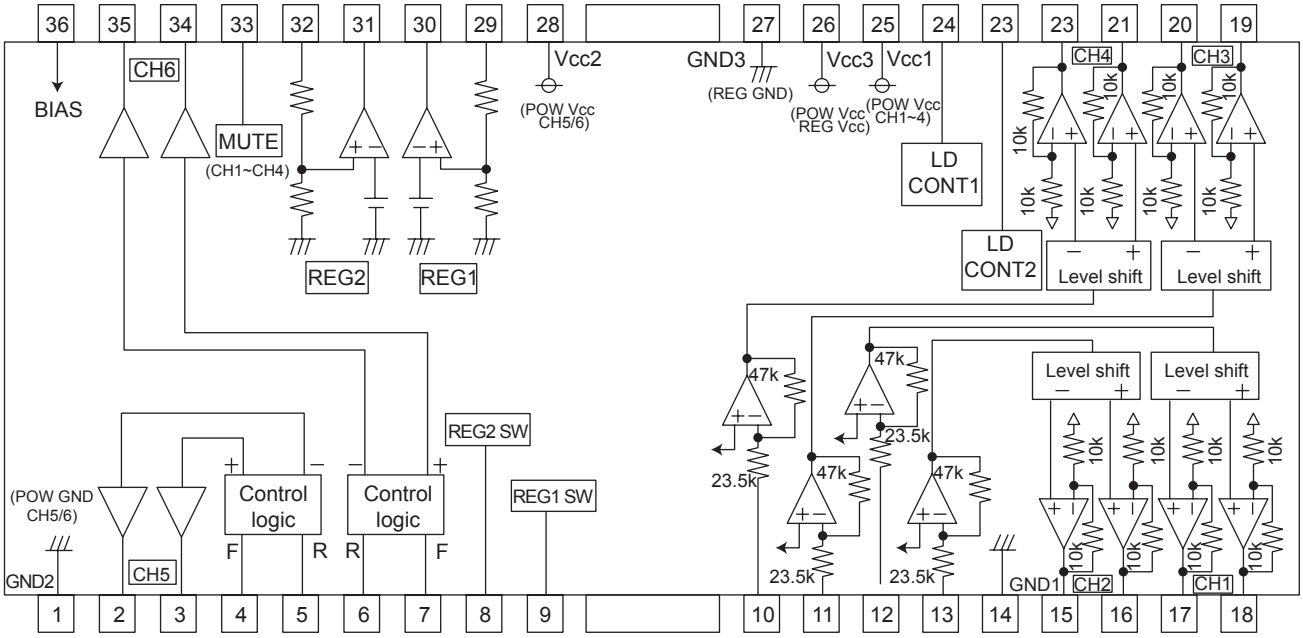


• Pin functions

Pin No	Symbol	Function
1	VOUT	Reset output
2	SUB	Sub slate (connect to GND)
3	N.C.	Non connect
4	GND	GND
5	VDD	Power supply voltage

4.3 BD7961FM-X (IC681) : Power driver

• Pin layout & Block diagram



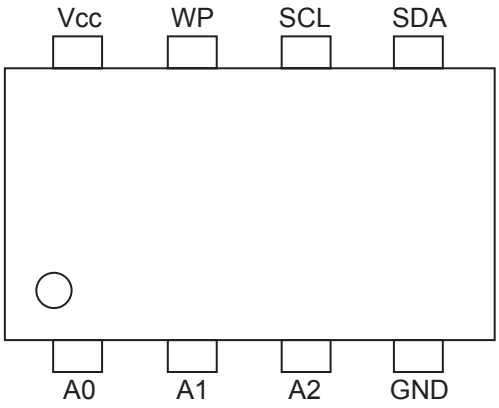
• Pin functions

Pin No	Symbol	Function
1	GND2	Power GND (loading driver unit)
2	OUT5-	Loading driver (CH5) output -
3	OUT5+	Loading driver (CH5) output +
4	IN5FWD	Loading driver (CH5) FWD input
5	IN5REV	Loading driver (CH5) REV input
6	IN6REV	Loading driver (CH6) REV input
7	IN6FWD	Loading driver (CH6) FWD input
8	REG2SW	Regulator 2 switch terminal
9	REG1SW	Regulator 1 switch terminal
10	IN4	CH4 input
11	IN3	CH3 input
12	IN1	CH1 input
13	IN2	CH2 input
14	GND1	Power GND (BTL driver unit)
15	OUT2-	BTL driver (CH2) output -
16	OUT2+	BTL driver (CH2) output +
17	OUT1-	BTL driver (CH1) output -
18	OUT1+	BTL driver (CH1) output +

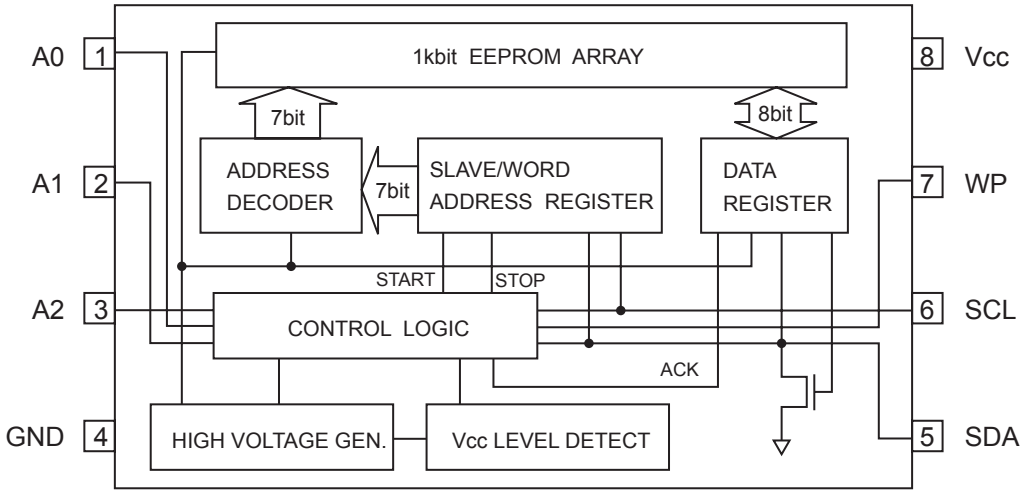
Pin No	Symbol	Function
19	OUT3+	BTL driver (CH3) output +
20	OUT3-	BTL driver (CH3) output -
21	OUT4+	BTL driver (CH4) output +
22	OUT4-	BTL driver (CH4) output -
23	LDCONT2	Loading driver (CH6) voltage setting
24	LDCONT1	Loading driver (CH5) voltage setting
25	Vcc1	Supply voltage (BTL driver unnit)
26	Vcc3	Supply voltage (regulator unit)
27	GND3	REG GND (regulator unit)
28	Vcc2	Supply voltage (loading driver unit)
29	REG1OUT	Regulator output 1
30	REG1 B	Regulator 1 Tr base
31	REG2 B	Regulator 2 Tr base
32	REG2OUT	Regulator output 2
33	MUTE	BTL drivermute terminal
34	OUT6+	Loading driver (CH6) output +
35	OUT6-	Loading driver (CH6) output -
36	BIAS	BIAS terminal

4.4 BR24C01AFV-W-X (IC503) : EEPROM

• Pin layout



• Block diagram



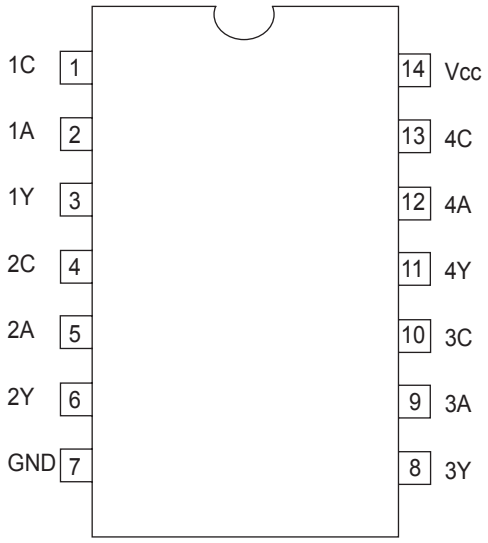
• Pin function

Pin name	I/O	Description
Vcc	-	Power supply
GND	-	Ground (0v)
A0A1A2	IN	Slave address set
SCL	IN	Serial clock input
SDA	IN / OUT	Slave and word addressserial data input serial data output *1
WP	IN	Write protect input

*1 An open drain output requires a pull-up resister.

4.5 HD74HCT126T-X : (IC541,IC691) Buffer

• Pin arrangement

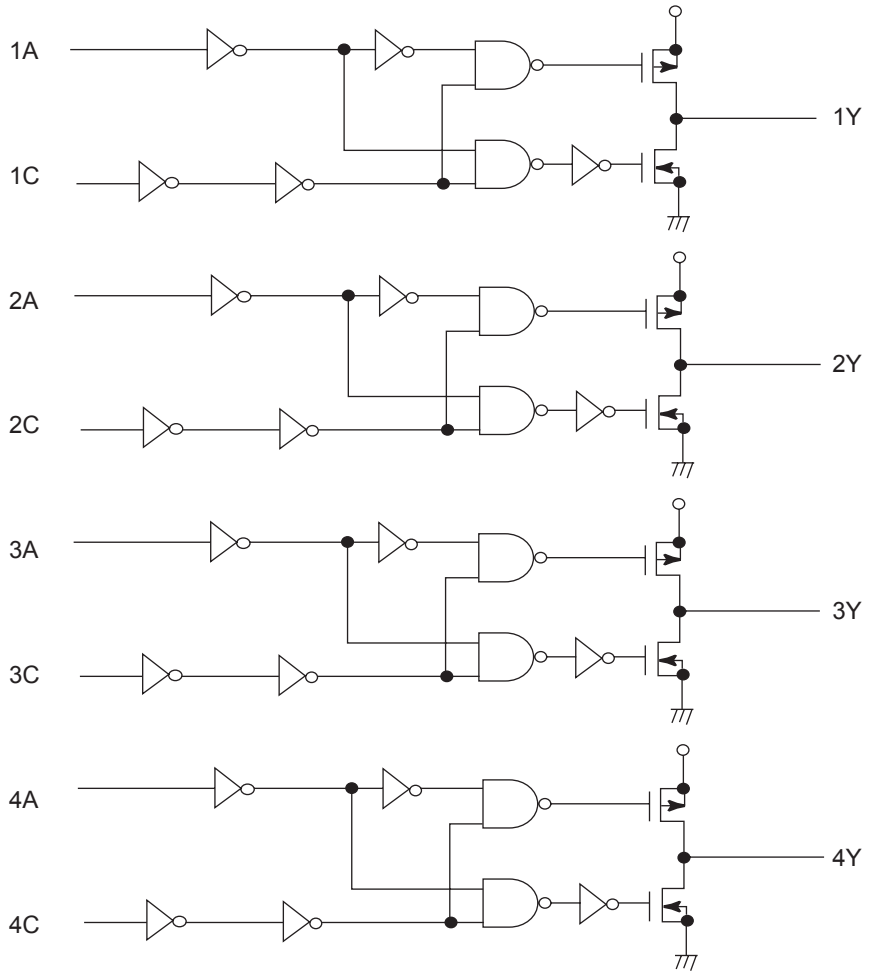


• Pin function

Input		Output
C	A	Y
L	X	Z
H	L	L
H	H	H

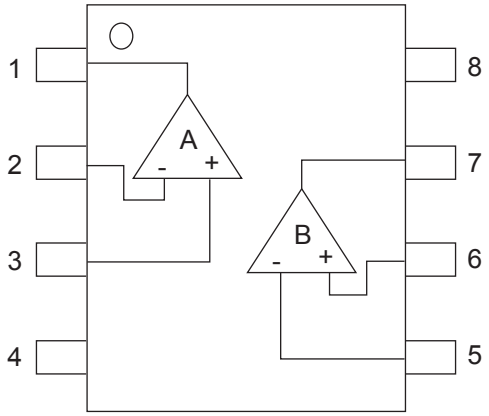
H : High level
L : Low level
X : Irrelevant
Z : Off (Hhigh-impedance)state of a 3-stage output

• Block diagram



4.6 NJM4565V-X (IC151) : Dual ope amp

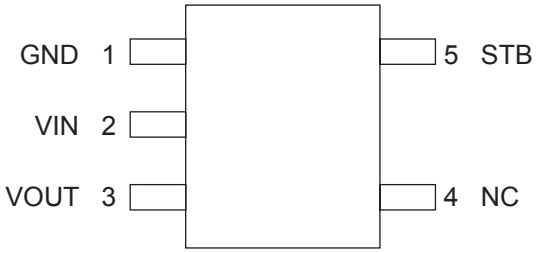
• Terminal layout & Pin function



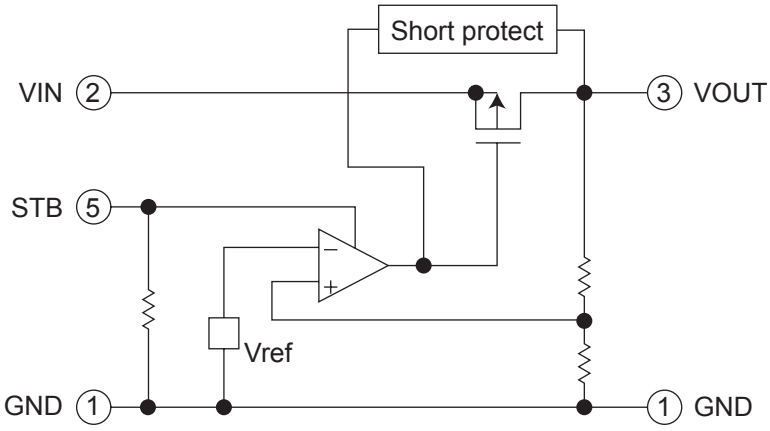
1 AOUTPUT
2 A-INPUT
3 A+INPUT
4 V^-
5 B+INPUT
6 B-INPUT
7 B OUTPUT
8 V^+

4.7 NJU7241F25-X (IC653) : Regulator

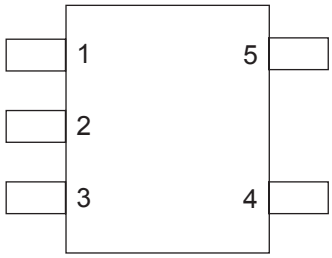
• Pin layout



• Block diagram



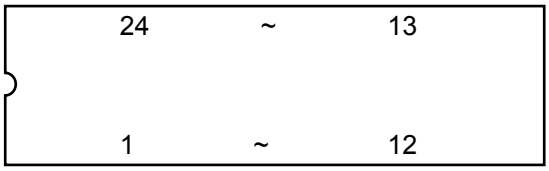
4.8 NJU7241F33-X (IC652) : Voltage regulator



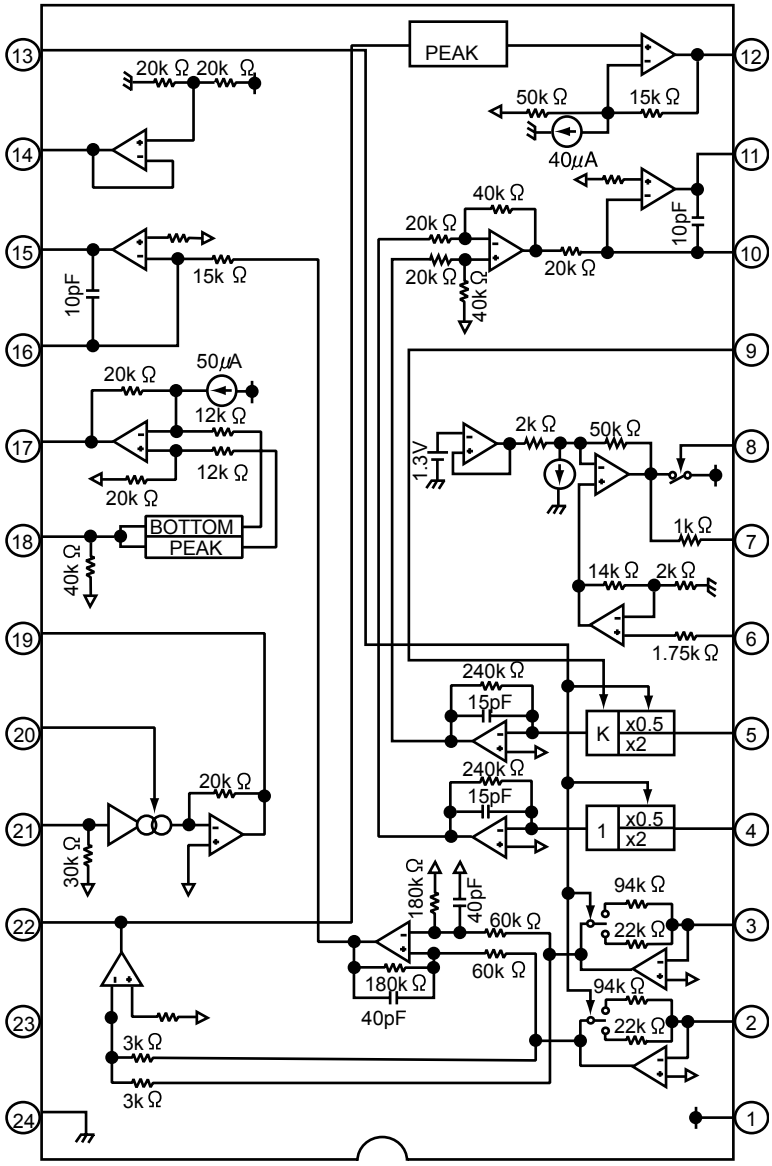
PIN FUNCTION
1. GND
2. V_{IN}
3. V_{OUT}
4. +NC
5. STB

4.9 TA2157FN-X (IC601) : RF amp

- Terminal layout



- Block diagram



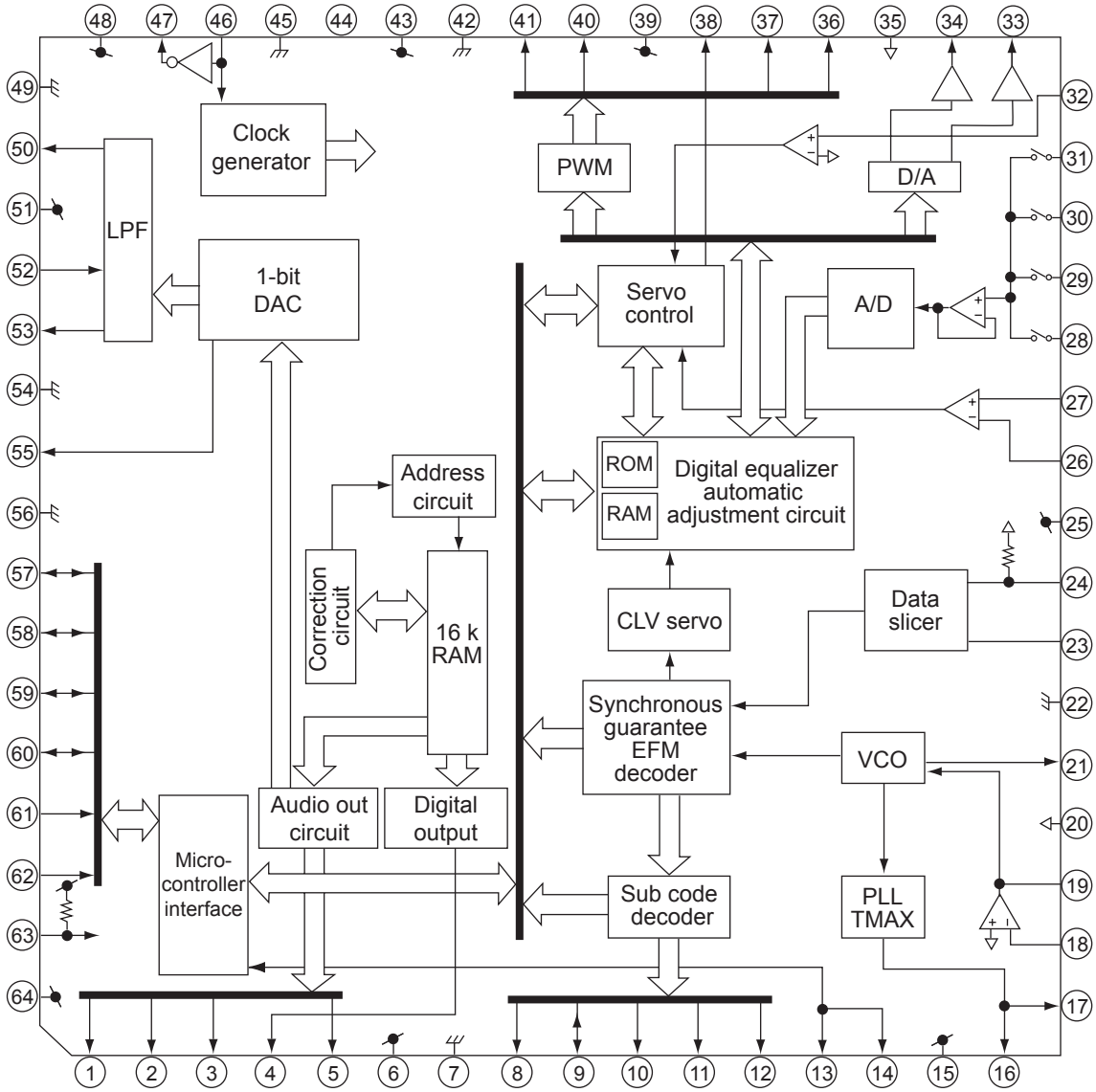
PIN / VCTRLPIN	SEL (APC SW)	TEB (TE BAL)	RFGC (AGC Gian)	TEB (TE BAL)
VCC	APC ON	-50%	+12dB	Normal mode (0dB)
HiZ	APC ON	0%	+6dB	Normal mode (0dB)
GND	APC OFF (LDO=H)	50%	0dB	CD-RW mode (+12dB)

• Pin function

<table>
<tr><th>Pin No.</th><th>Symbol</th><th>I/O</th><th>Function</th></tr>
<tr><td>1</td><td>VCC</td><td>-</td><td>3.3V power supply pin</td></tr>
<tr><td>2</td><td>FNI</td><td>I</td><td>Main-beam amp input pin</td></tr>
<tr><td>3</td><td>FPI</td><td>I</td><td>Main-beam amp input pin</td></tr>
<tr><td>4</td><td>TPI</td><td>I</td><td>Sub-beam amp input pin</td></tr>
<tr><td>5</td><td>TNI</td><td>I</td><td>Sub-beam amp input pin</td></tr>
<tr><td>6</td><td>MDI</td><td>I</td><td>Monitor photo diode amp input pin</td></tr>
<tr><td>7</td><td>LDO</td><td>O</td><td>Laser diode amp output pin</td></tr>
<tr><td>8</td><td>SEL</td><td>I</td><td>APC circuit ON/OFF control signal, laser diode (LDO) control signal input
or bottom/peak detection frequency change pin.
<table>
<tr><th>SEL</th><th>APC circuit</th><th>LDO</th></tr>
<tr><td>GND</td><td>OFF</td><td>Connected VCC through 1kΩ resistor</td></tr>
<tr><td>Hiz</td><td>ON</td><td>Control signal output</td></tr>
<tr><td>VCC</td><td>ON</td><td>Control signal output</td></tr>
</table></td></tr>
<tr><td>9</td><td>TEB</td><td>I</td><td>Tracking error balance adjustment signal input pin
Adjusts TE signal balance by eliminating carrier component from PWM signal (3-state output, PWM carrier = 88.2kHz) output from TC94A14F/FA
TEBC pin using RC-LPF and inputting DC.
TEBC input voltage:GND~VCC</td></tr>
<tr><td>10</td><td>TEN</td><td>I</td><td>Tracking error signal generation amp negative-phase input pin</td></tr>
<tr><td>11</td><td>TEO</td><td>O</td><td>Tracking error signal generation amp output pin.
Combining TEO signal RFRP signal with TC94A14F/FA configures tracking search system.</td></tr>
<tr><td>12</td><td>RFDC</td><td>O</td><td>RF signal peak detection output pin</td></tr>
<tr><td>13</td><td>GVSW</td><td>I</td><td>AGC/FE/TE amp gain change pin
<table>
<tr><td>GVSW</td><td>Mode</td></tr>
<tr><td>GND</td><td>CD-RW</td></tr>
<tr><td>Hiz</td><td rowspan="2">Normal</td></tr>
<tr><td>VCC</td></tr>
</table></td></tr>
<tr><td>14</td><td>VRO</td><td>O</td><td>Reference voltage (VRO) output pin
*VRO=1/2VCC When VCC=3.3V</td></tr>
<tr><td>15</td><td>FEO</td><td>O</td><td>Focus error signal generation amp output pin</td></tr>
<tr><td>16</td><td>FEN</td><td>I</td><td>Focus error signal generation amp negative-phase input pin</td></tr>
<tr><td>17</td><td>RFRP</td><td>O</td><td>Signal amp output pin for track count
Combining RFRP signal and TEO signal with TC94A14F/FA configures tracking search system.</td></tr>
<tr><td>18
19
20</td><td>REIS
RFGO
RFGC</td><td>I
O
I</td><td>
RF signal amplitude adjustment amp output pin
RF amplitude adjustment control signal input pin
Adjusts RF signal amplitude by eliminating carrier component from PWM signal (3-state output, PWM carrier=88.2kHz)output fromTC94A14F/14FA *RFGC pin using RC-LPF and inputting DC.
*RFGC input voltage:GND~VCC</td></tr>
<tr><td>21</td><td>AGCIN</td><td>I</td><td>RF signal amplitude adjustment amp input pin</td></tr>
<tr><td>22</td><td>RFO</td><td>O</td><td>RF signal generation amp output pin</td></tr>
<tr><td>23</td><td>RFI</td><td>I</td><td>RF signal generation amp input pin</td></tr>
<tr><td>24</td><td>GND</td><td>-</td><td>GND pin</td></tr>
</table>

4.10 TC94A14FA (IC621) : DSP & DAC

• Terminal layout & block daiagram



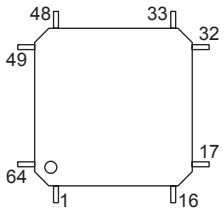
• Pin function

Pin No	Symbol	I/O	Descroption
1	BCK	O	Bit clock output pin.32fs48fsor 64fs selectable by command.
2	LRCK	O	L/R channel clock output pin."L" for L channel and "H" for R channel. Output polarity can be inverted by command.
3	AOUT	O	Audio data output pin. MSB-first or LSB-first selectable by command.
4	DOUT	O	Digital data output pin.Outputs up to double-speed playback.
5	IPF	O	Correction flag output pin. When set to "H" AOUT output cannot be corrected by C2 correction processing.
6	V_{DD3}	-	Digital 3.3V power supply voltage pin.
7	V_{SS3}	-	Digital GND pin.
8	SBOK	O	Subcode Q data CRCC result output pin. "H" level when result is OK.
9	CLCK	O	Subcode P-W data read I/O pin. I/O polarity selectable by command.
10	DATA	O	Subcode P-W data output pin.
11	SFSY	O	Playback frame sync signal output pin.
12	SBSY	O	Subcode block sync signal output pin. "H" level at S1 when subcode sync is detected.
13	HSO	I/O	General-purpose input / output pins.Input port at reset.
14	UHSO		
15	PV_{DD3}	-	PLL-only 3.3V power supply voltage pin.

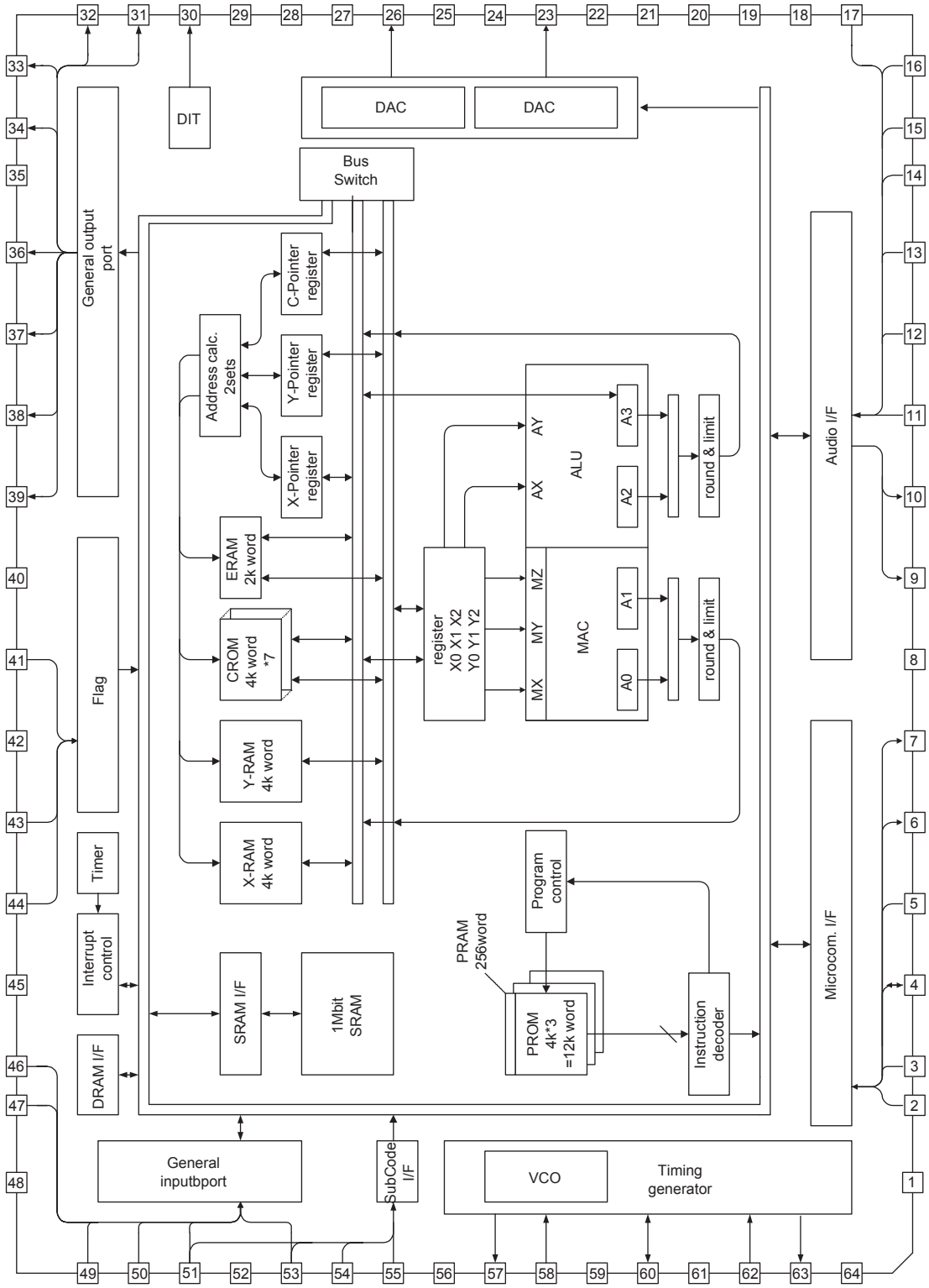
Pin No	Symbol	I/O	Descroption
16	PDO	O	EFM and PLCK phase difference signal output pin.
17	TMAX	O	TMAX detection result output pin. TMAX Detection Result / TMAX Output Longer than fixed period / "PV_{DD3}" Within fixed period / "HiZ" Shorter than fixed period / "AV_{SS3}"
18	LPFN	I	Inverted input pin for PLL LPF amp.
19	LPFO	O	Output pin for PLL LPF amp.
20	PVREF	-	PLL-only VREF pin.
21	VCOF	O	VCO filter pin.
22	AV_{SS3}	-	Analog GND pin.
23	SLCO	O	DAC output pin for data slice level generation.
24	RFI	I	RF signal input pin. Zin selectable by command.
25	AV_{DD3}	-	Analog 3.3V power supply voltage pin.
26	RFCT	I	RFRP signal center level input pin.
27	RFZI	I	RFRP signal zero-cross input pin.
28	RFRP	I	RF ripple signal input pin.
29	FEI	I	Focus error signal input pin.
30	SBAD	I	Sub-beam adder signal input pin.
31	TEI	I	Tracking error input pin. Inputs when tracking servo is on.
32	TEZI	I	Tracking error signal zero-cross input pin.
33	FOO	O	Focus equalizer output pin.
34	TRO	O	Tracking equalizer output pin.
35	VREF	-	Analog reference power supply voltage pin.
36	RFGC	O	RF amplitude adjustment control signal output pin.
37	TEBC	O	Tracking balance control signal output pin.
38	SEL	O	APC circuit ON/OFF signal output pin. At laser on, high impedance with UHS="L", H output with UHS="H".
39	AV_{DD3}	-	Analog 3.3V power supply voltage pin.
40	FMO	O	Feed equalizer output pin.
41	DMO	O	Disc equalizer output pin.
42	V_{SS3}	-	Digital GND pin.
43	V_{DD3}	-	Digital 3.3V power supply voltage pin.
44	TESIN	I	Test input pin. Normally, fixed to "L".
45	XV_{SS3}	-	System clock oscillator GND pin.
46	XI	I	System clock oscillator input pin.
47	XO	O	System clock oscillator output pin.
48	XV_{DD3}	-	System clock oscillator 3.3V power supply voltage pin.
49	$DV_{SS3}R$	-	DA converter GND pin.
50	RO	O	R-channel data forward output pin.
51	DV_{DD3}	-	DA converter 3.3V power supply pin.
52	DVR	-	Reference voltage pin.
53	LO	O	L-channel data forward output pin.
54	$DV_{SS3}L$	-	DA converter GND pin.
55	ZDET	O	1 bit DA converter zero detection flag output pin.
56	V_{SS5}	-	Microcontroller interface GND pin.
57	BUS0		
58	BUS1	I/O	Microcontroller interface data I/O pins.
59	BUS2		
60	BUS3		
61	BUCK	I	Microcontroller interface clock input pin.
62	/CCE	I	Microcontroller interface chip enable signal input pin.At "L", BUS0 to BUS3 are active.
63	/RST	I	Reset signal input pin. At reset, "L".
64	V_{DD5}	-	Microcontroller interface 5V power supply pin.

4.11 TC94A20F-011 (IC651) : DAC/SRAM built in type D-ROM decoder+ MP3 decoder

- Pin layout



- Block diagram

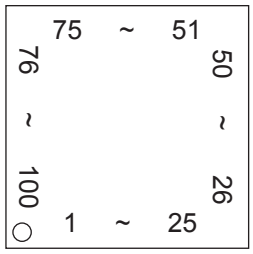


• Pin functions

Pin No	Symbol	I/O	Functions
1	/RESET	I	Hard reset input H:normal L:reset
2	MiMD	I	Micon I/F mode select input
3	/MiCS	I	Micon I/F chip select input
4	/MiLP	I	Micon I/F latch palus input
5	MiDio	I/O	Micon I/F data input/output
6	/MiCK	I	Micon I/F clock input
7	MiACK	O	Micon I/F acknowledge output
8	VDDT	-	Power supply for digital (3.3V)
9	SDo	O	Data output
10	BCKo	O	Bit output
11	LRCKo	O	LR clock output
12	SDiO	I	Data input 0
13	BCKiA	I	Bit clock input A
14	LRCKiA	I	LR clock input A
15	SDiL	I	Data input terminal 1
16	BCKiB	I	Bit clock input terminal B
17	LRCKiB	I	LR clock input terminal B
18	VDD	-	Power supply for digital (2.5V)
19	STANBY	I	Standby mode control input H:STBY L:normal
20	VSS	-	GND for digital
21	VSSL	-	GND for DAC Lch
22	VRAL	-	Reference voltage for DAC Lch
23	LO	O	DAC Lch output
24,25	VDAL,VDAR	-	Power supply for DAC Lch/Power supply for DAC Rch (2.5V)
26	RO	O	DAC Rch output
27	VRAR	-	Reference voltage for DAC Rch
28	VSSR	-	GND for DAC R ch
29	TESTP	I	Test terminal H:test mode L:normal
30	TXO	O	SPDIF output
31~34	Po0~Po3	O	General purpose output 0 ~ 3
35	VDDT	-	Power supply for digital (3.3V)
36~38	Po4~Po6	O	General purpose output 4 ~ 6
39	REQ	O	REC terminal
40	VSS	-	GND for digital
41	IRO	I/O	External interrupt input
42	VDDM	-	Internal 1Mbit SRAM power supply (2.5V)
43,44	Fi0,Fi1	I	Flug input 0,1
45	VSSM	-	GND for internal 1Mbit SRAM
46,47	Pi0,Pi1	I	General ourpose input 01
48	VSS	-	GND for digital
49,50	Pi2,Pi3	I	General purpose input 23
51	Pi4/CLCL	I	General purpose input 4/SUBQ I/F clock inputoutput
52	VDD	-	Power supply for digital (2.5V)
53	Pi5/DATA	I	General purpose input 5/SUBQ I/F data input
54	TSTiN/SFSY	I	Test terminal/SUBQ I/F flame sync input
55	Fi2/SBSY	I	Flug input 2/SUBQ I/F block sync input
56	VSSP	-	GND for VCO
57	Pdo	O	PLL phase error detection signal output
58	Vcoi	I	VCO control voltage input
59	VDDP	-	Power supply for VCO (2.5V)
60	CKo/CKi	I/O	External clock input/Clock output terminal
61	VDDX	-	Power supply for X'tal oscillator (2.5V)
62,63	Xi,Xo	I,O	Oscillator connection terminal for input/output
64	VSSX	-	GND for oscillator

4.12 UPD784217AGC209 (IC501) : System micon

• Pin layout



• Pin functions

Pin No	Symbol	I/O	Function
1	NC	O	Non connect
2	DAC SEL	I	DAC presence mode
3,4	NC	-	Non connect
5	MP3 SEL	I	MP3 presence mode
6	SHOCK SEL	I	H:shock detection 1 L:shock detection 2
7	STAGE1	I	LCD/AD key/Rimocon invalid select L:invalid
8	STAGE2	I	Initial setting port
9	VDD1	-	Connect to 5V
10	X2	O	Oscillator output(12.5MHz)
11	X1	I	Oscillator input(12.5MHz)
12	GND	-	GND
13	XT2	O	Open
14	XT1	I	Connect to GND
15	RESET	I	Reset input
16	REMOCON	I	Remocon signal input
17	B.DET	I	Buck up power supply detection
18	P.DET	I	Main power off detection
19	BUS INT	I	JVC BUS communication start interrupu input
20	MP3 REQ	I	CD MP3 request input
21	NC	-	Non connect
22	EJECT	I	Eject key input
23	VDD0	-	Connect to 5V
24	AVDD	-	Connect to AD CONT(power supply for A/D converter)
25	IOP	I	Pickup IOP measurement input
26~29	KEY0~3	I	Key input 0 ~ 3 (8bit A/D input)
30	TEMP IN	I	Temp. detection input
31	L SENSOR	I	Linear senser input (8bit A/D input)
32	NC	I	Non connect (connect to GND)
33	GND	-	GND for A/D converter
34	ADCONT	O	Out put H at power ON stop mode:L
35	V CONT	O	Position motor voltage control analog output
36	VREF	-	Reference voltage for A/D converter
37	EPROMDI	I	EEPROM data input
38	EPROMDO	O	EEPROM data output
39	EPROMCK	I/O	EEPROM clock inpt/output
40	LCD CE	O	CE output for LCD driver
41	LCD DA	O	Data output for LCD driver
42	LCD CK	O	Clock output for LCD driver
43	NC	O	Non connect
44	BUS I/O	O	JVC BUS input/output control
45	BUS SI	I	JVC BUS data input

Pin No	Symbol	I/O	Function
46	BUS SO	O	JVC BUS data output
47	BUS SCK	I/O	JVC BUS colck input/ooutput
48	POSMO+	O	Position motor control output
49	POSMO-	O	Position motor control output
50	TRAYMO+	O	Tray motor control output
51	TRAYMO-	O	Tray motor control output
52,53	NC	-	Non connect
54	EMPH	O	Emphasis select output H:ON
55	PWR CONT	O	Output for power control H:ON
56	BUSOUT	O	JVC BUS output
57	CD ON	O	CD power supply control (5V) H:ON
58	NC	-	Non connect
59	CD MUTE	O	CD mute output H:mute ON
60	SHOCK	I	Shock detection input Shock:L
61	NC	-	Non connect
68	2X PLAY	O	2x speed playback corespond RF frequency response select output (2x:L)
69	RW SEL	O	CD-RW select output (RW:L)
70,71	NC	-	Non connect
72	GND	-	GND
73	MP3 DI	I	CD MP3 data input
74	MP3 DO	O	CD MP3 data output
75	MP3 CK	O	Clock for CD MP3 data
76	MP3 RESET	O	CD MP3 reset
77	MP3 STB	O	CD MP3 standby output (H:standby)
78	CD CHECK	I	CD CHECK mode input (only reset mode)
79	LED	O	Lifter LED output
80	EPROM CLR	I	EPROM clear input
81	VDD	-	Connect to 5V
82	MAG IN	I	Magazin switch L:magazin in
83	TRAY IN	I	Tray return switch L: complete return
84	TRAY OUT	I	Tray loading switch L:complete loading
85	REST	I	Rest switch
86	DAC PDN	O	DAC power down mode
87	DAC CSN	O	DAC chip select output
88	DAC CCLK	O	DAC clock data output
89	DAC CDTI	O	DAC data output
90	NC	O	Non connect
91	DSP RESET	O	CD DSP reset
92	CCE	O	CD DSP chip enable
93	BUCK	O	Clock for CD DSP data
94	VPP	-	Connect to GND
95~98	BUS0~3	I/O	CD DSP data 0 ~ 3
99100	NC	I	Non connect

JVC
VICTOR COMPANY OF JAPAN, LIMITED
AV & MULTIMEDIA COMPANY 10-1,1chome,Ohwatari-machi,Maebashi-city,371-8543,Japan

(No.49804)

Printed in Japan
200303WPC

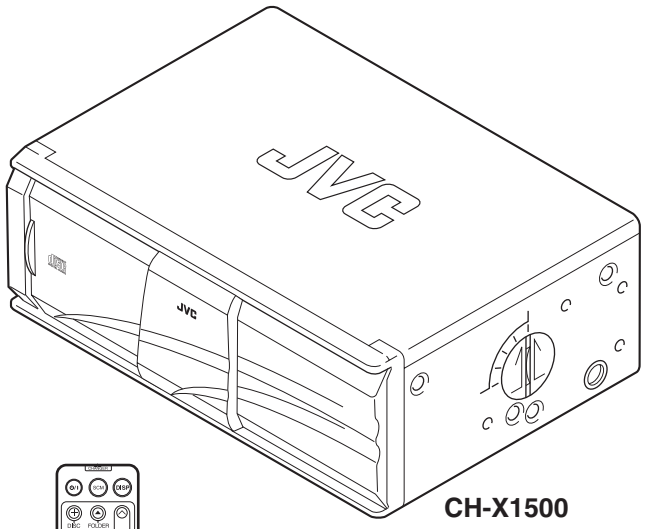
JVC

SCHEMATIC DIAGRAMS

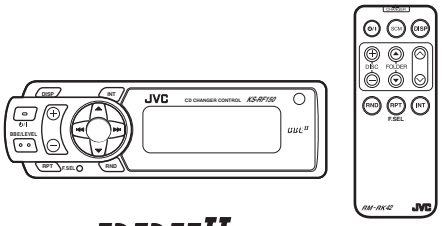
CD CHANGER

CH-X1500RF

CD-ROM No.SML200303



CH-X1500



KS-RF150

Area Suffix

J ------- Northern America

CH-X1500RF is a combination of CH-X1500 and KS-RF150.
KS-RF150 is a combination of Remote control and the RF unit.

Contents

Block diagram ----------2-1
Standard schematic diagrams ---------2-2
Printed circuit boards ----------2-5

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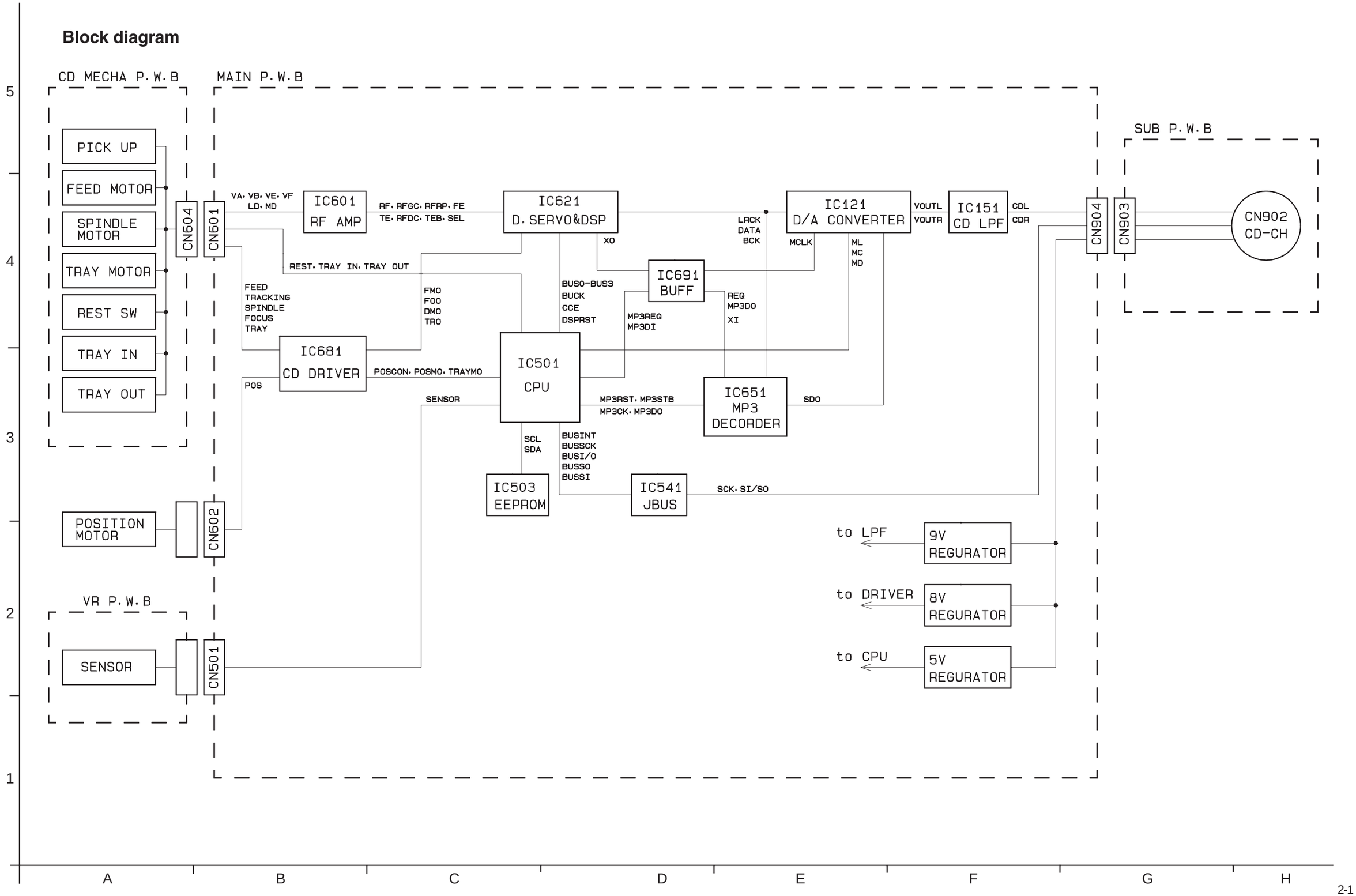
No.49804SCH
Mar. 2003

Safety precaution

⚠ ***CAUTION*** **Burrs formed during molding may be left over on some parts of the chassis. Therefore, pay attention to such burrs in the case of preforming repair of this system.**

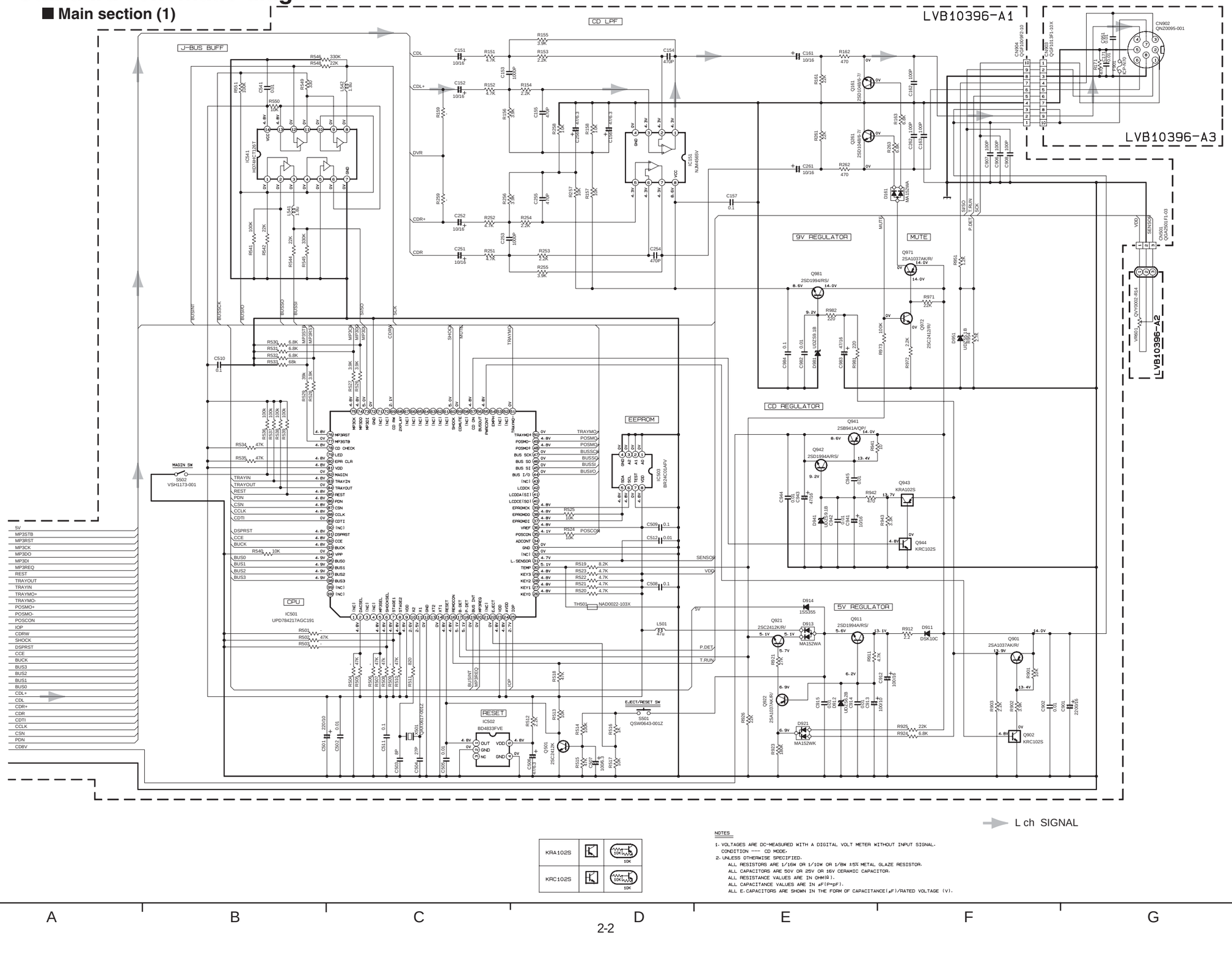
⚠ ***CAUTION*** **Please use enough caution not to see the beam directly or touch it in case of an adjustment or operation check.**

Block diagram



Standard schematic diagrams

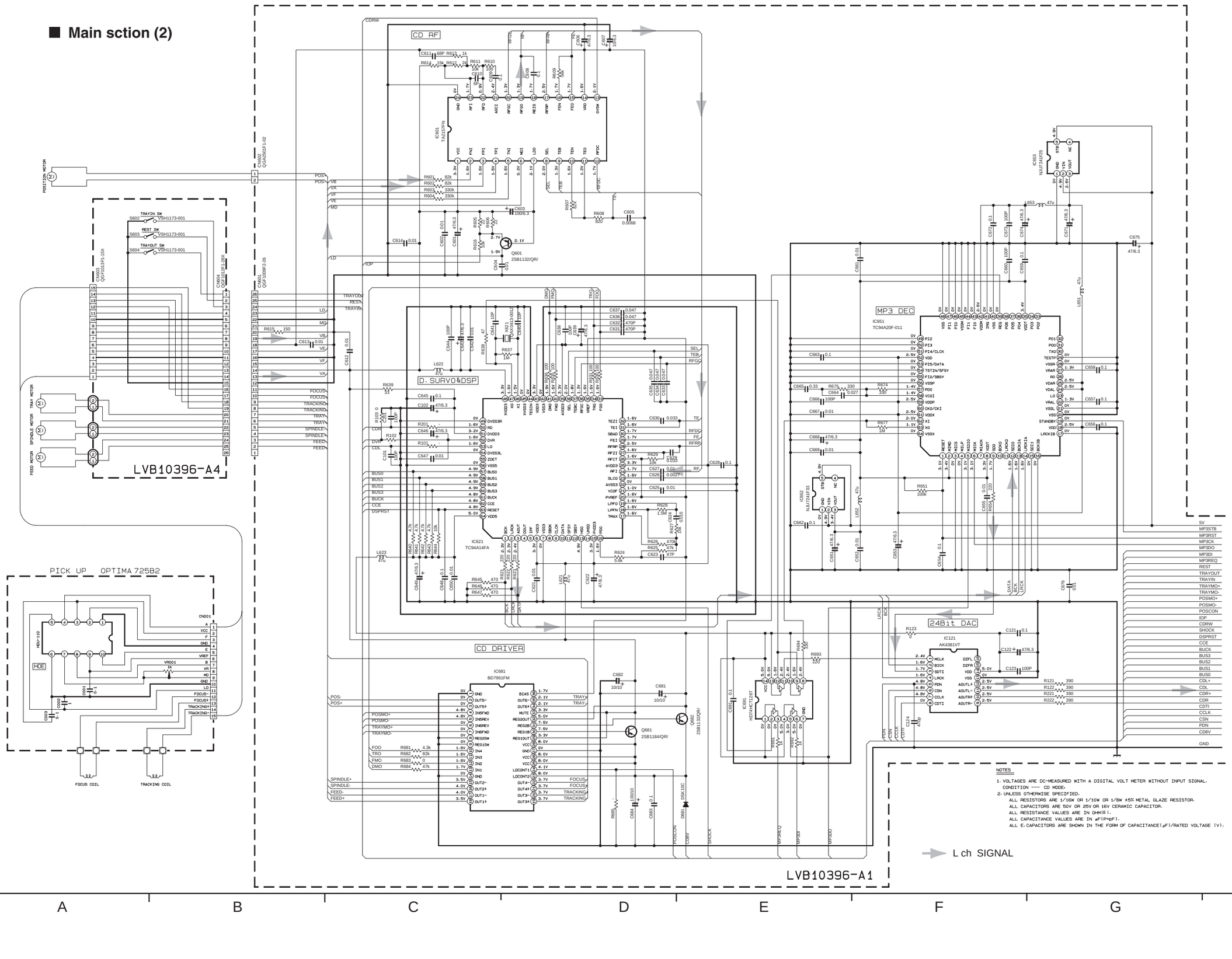
■ Main section (1)



NOTES

1. VOLTAGES ARE DC-MEASURED WITH A DIGITAL VOLT METER WITHOUT INPUT SIGNAL.
   CONDITION ---- CD MODE.
2. UNLESS OTHERWISE SPECIFIED.
   ALL RESISTORS ARE 1/16W OR 1/10W OR 1/8W ±5% METAL GLAZE RESISTOR.
   ALL CAPACITORS ARE 50V OR 25V OR 16V CERAMIC CAPACITOR.
   ALL RESISTANCE VALUES ARE IN OHM(Ω).
   ALL CAPACITANCE VALUES ARE IN μF(P=pF).
   ALL E-CAPACITORS ARE SHOWN IN THE FORM OF CAPACITANCE(μF)/RATED VOLTAGE (V).

■ Main sction (2)


CD RF
D. SURVO&DSP
CD DRIVER
MP3 DEC
24Bit DAC
PICK UP OPTIMA 725B2
LVB10396-A4
LVB10396-A1
L ch SIGNAL
NOTES
1. VOLTAGES ARE DC-MEASURED WITH A DIGITAL VOLT METER WITHOUT INPUT SIGNAL.
CONDITION ---- CD MODE.
2. UNLESS OTHERWISE SPECIFIED.
ALL RESISTORS ARE 1/16W OR 1/10W OR 1/8W ±5% METAL GLAZE RESISTOR.
ALL CAPACITORS ARE 50V OR 25V OR 16V CERAMIC CAPACITOR.
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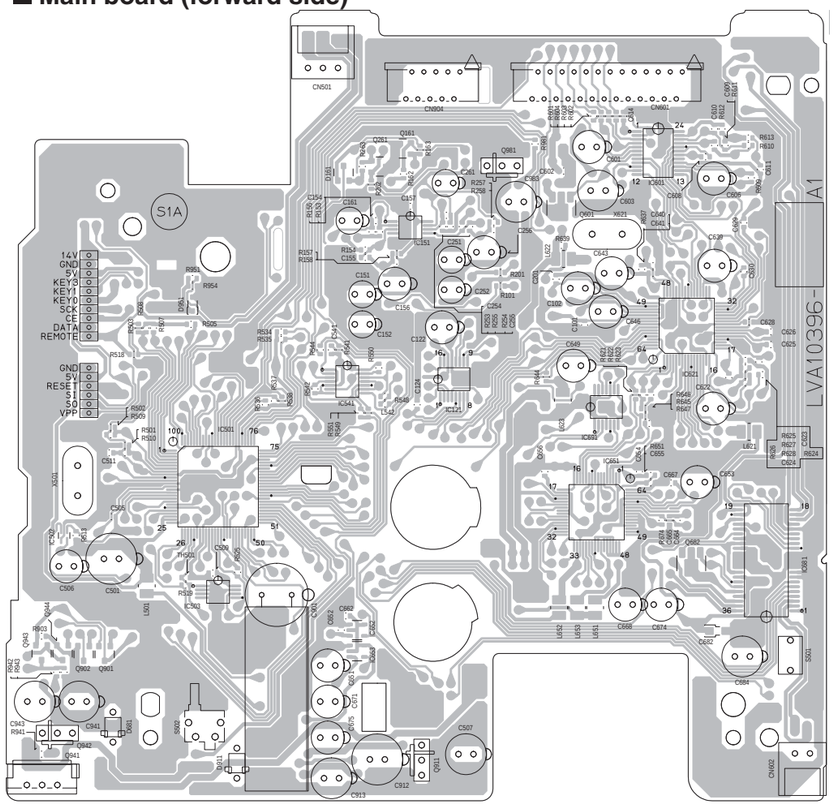
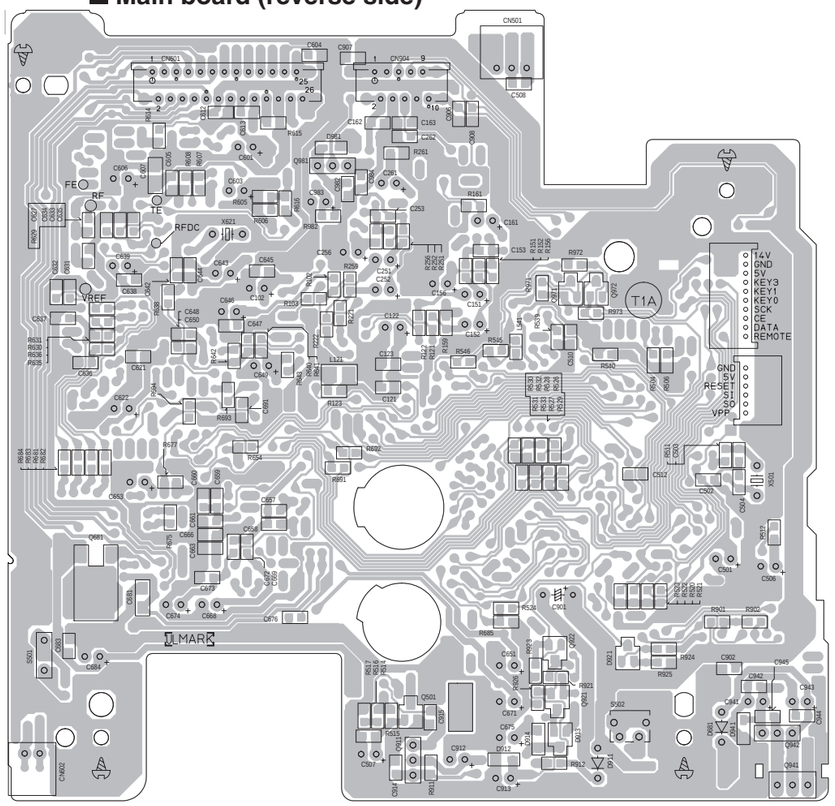
ALL CAPACITANCE VALUES ARE IN μF(P=pF).
ALL E.CAPACITORS ARE SHOWN IN THE FORM OF CAPACITANCE(μF)/RATED VOLTAGE (V).

Printed circuit baords

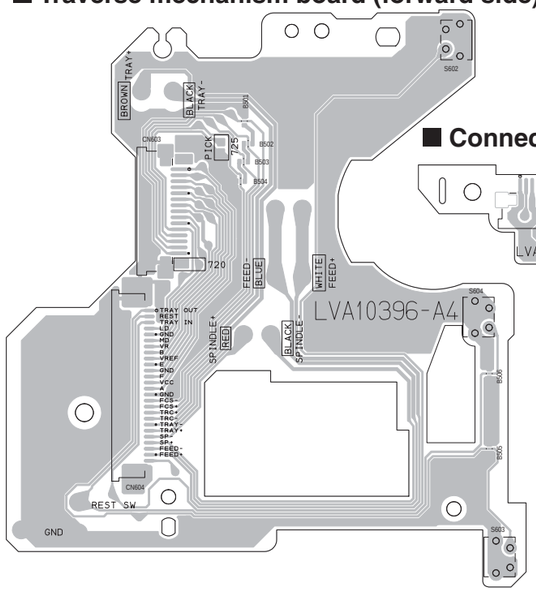
■ Main board (forward side)



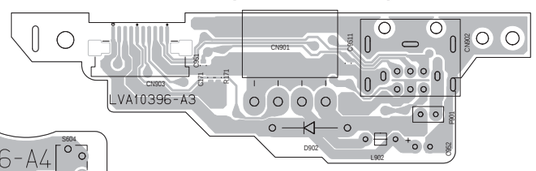
■ Main board (reverse side)



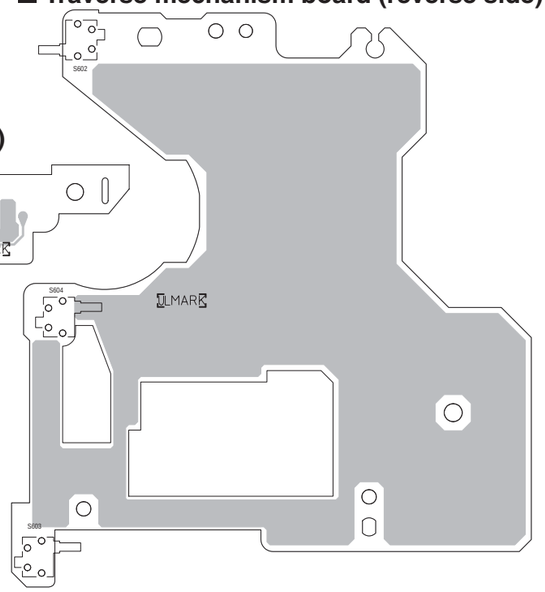
■ Traverse mechanism board (forward side)



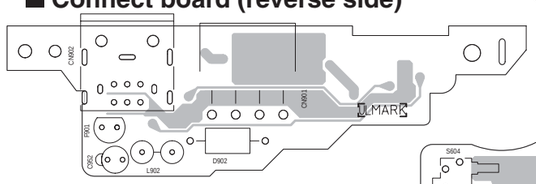
■ Connect board (forward side)



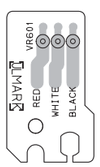
■ Traverse mechanism board (reverse side)



■ Connect board (reverse side)



■ Sensor board (reverse side)



< MEMO >

CH-X1500RF

JVC

VICTOR COMPANY OF JAPAN, LIMITED

AV & MULTIMEDIA COMPANY 10-1,1Chome,Ohwatari-machi,Maebashi-city,371-8543,Japan

(No.49804SCH)

Printed in Japan
200303

PARTS LIST

[CH-X1500RF]

* All printed circuit boards and its assemblies are not available as service parts.

Area suffix

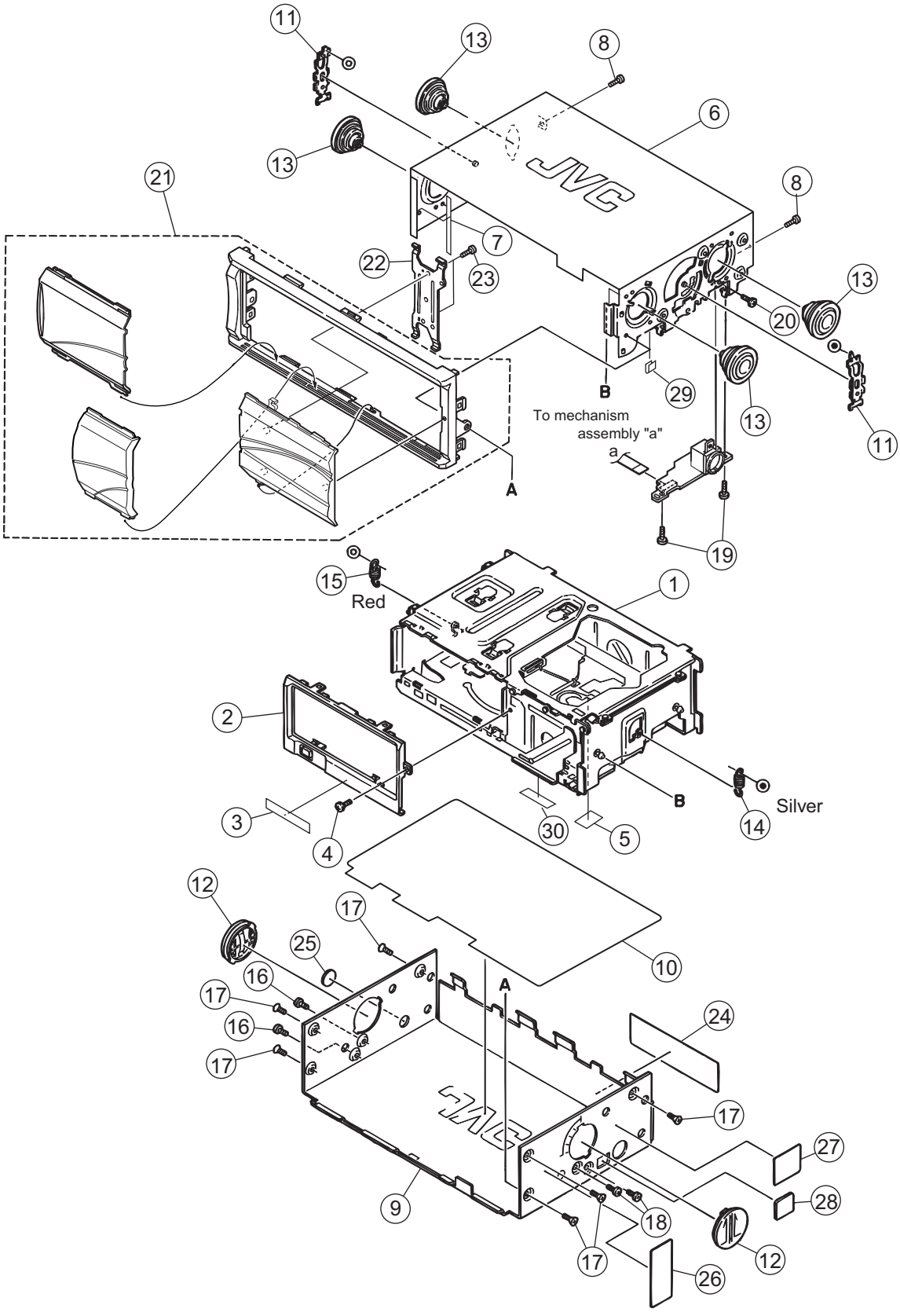
J ---------- Northern America

- Contents -

Exploded view of general assembly and parts list (Block No.M1) ---------- 3-2
CD changer mechanism assembly and parts list (Block No.MA) ---------- 3-4
Electrical parts list (Block No.01) ---------- 3-6
Packing materials and accessories parts list (Block No.M3,M5) ---------- 3-10

EXPLODED VIEW OF GENERAL ASSEMBLY AND PARTS LIST

Block No. M 1 M M



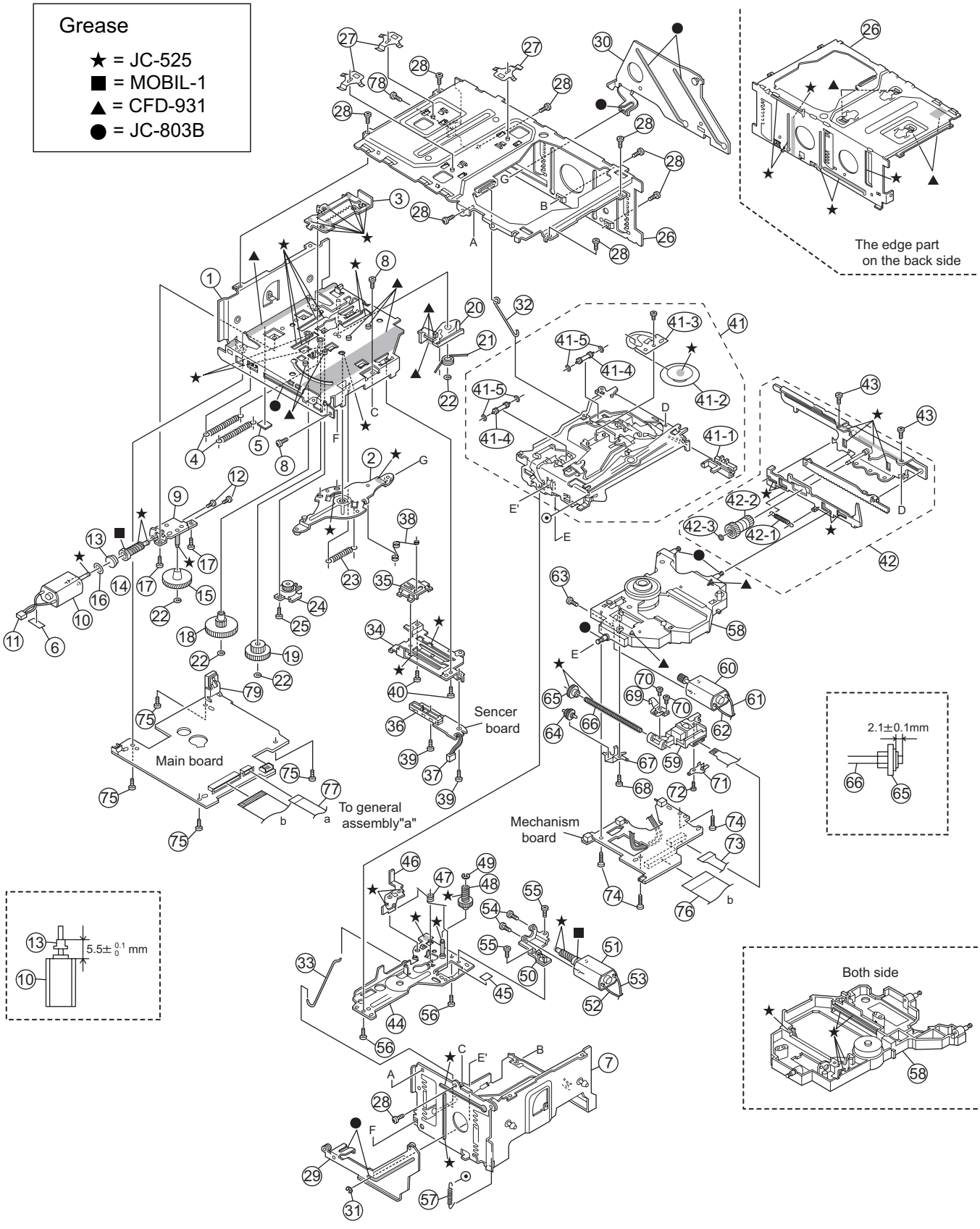
GENERAL ASSEMBLY

Block No. [M][1][M][M]

⚠ Symbol No.		Part No.	Part Name	Description	Local
1		----------	CH-X1500 MECHA		
2		LV20065-004B	FITTING		
2	or	LV20065-204B	FITTING		
3		LV40706-003A	CAUTION LABEL		
4		QYSDST2004Z	SCREW	2mm x 4mm	
5		LV41266-001A	SPACER		
6		LV10407-006A	TOP COVER		
7		VYSH101-031	SPACER		
8		QYSSST2005M	SCREW	2mm x 5mm(x2)	
9		LV10408-006A	BOTTOM COVER		
10		LV30632-001A	INSULATOR		
11		LV42152-001A	BRACKET	(x2)	
12		LV30360-004A	DIRECTION KNOB	(x2)	
13		LV30451-002A	DAMPER	(x4)	
14		LV40345-003A	DAMPER SP(R)		
15		LV40346-003A	DAMPER SP(L)		
16		QYSDST2604M	SCREW	2.6mm x 4mm(x2)	
17		QYSSST2605M	SCREW	2.6mm x 5mm(x6)	
18		QYSDST2604M	SCREW	2.6mm x 4mm(x2)	
19		QYSDST2005Z	SCREW	2mm x 5mm(x2)	
20		QYSDST2606Z	SCREW	2.6mm x 6mm	
21		LV21396-004A	F.PANEL ASS'Y		
22		LV30786-003A	HOLD BRACKET		
23		QYSDSF2005Z	SCREW	2mm x 5mm(x2)	
24		LV33919-001A	NAME PLATE		
25		VYSS2R2-028	SPACER		
26		LV40762-001A	CAUTION LABEL		
27		LV40487-003A	CAUTION LABEL		
28		LV40528-005A	LABEL		
29		VYSA1R4-056	SPACER		
30		LV40847-001A	SPACER(H)		

CD CHANGER MECHANISM ASSEMBLY AND PARTS LIST

Block No. M A M M



CD MECHANISM

Block No. [M][A][M][M]

⚠ Symbol No.	Part No.	Part Name	Description	Local
1	LV30096-004A	CHASSIS(L)ASSY		
2	LV40123-006A	LIFT ARM ASSY		
3	LV30098-003A	EJECT SLIDER		
4	LV40126-005A	EJECT SPRING	(x2)	
5	VYSH102-102	SPACER		
6	VYSA1R4-056	SPACER		
7	LV30097-001A	CHASSIS(R) ASSY		
8	QYSDST2004Z	SCREW	2mm x 4mm(x2)	
9	LV42097-001A	MOTOR BKT ASS'Y		
10	PPN-13KA10C	MOTOR(FEED)		
11	WJM0017-001A	E-SI C WIRE C-F		
12	QYSPSPT2025M	MINI SCREW	2mm x 2.5mm(x2)	
13	LV32442-001A	WORM DRIVE		
14	LV32440-001A	WORM GEAR		
15	LV32441-001A	WORM WHEEL(P)		
16	QYWFM164025	WASHER	6.4mm x 2mm	
17	QYSDST2004Z	SCREW	2mm x 4mm(x2)	
18	LV40132-003A	THIRD GEAR		
19	LV40133-005A	LIFTER GEAR		
20	LV30100-002A	APLOCK ARM		
21	LV40134-003A	M.LOCK SPRING		
22	QYWDL163525-6	SLIT WASHER	5.2mm x #NEV(x4)	
23	LV40142-003A	LIFTER SPRING		
24	LV40478-002A	EJECT DAMPER		
25	QYSDSR2006Z	SCREW	2mm x 6mm	
26	LV10027-002A	TOP COVER		
27	LV30101-004A	MAGAZINE SPRING	(x3)	
28	QYSDST2004Z	SCREW	2mm x 4mm(x9)	
29	LV30448-001A	FRONT SLIDER AS		
30	LV30449-001A	REAR SLIDER ASS		
31	LV42132-001A	E RING		
32	LV40135-004A	ROD(U)		
33	LV40136-003A	ROD(L)		
34	LV30104-002A	SENSOR BRACKET		
35	LV30105-001A	SENSOR HOLDER		
36	QVY0002-B14	S V RESISTOR		
37	WJM0017-002A	E-SI C WIRE C-F		
38	LV40137-002A	SENSOR SPRING		
39	QYSDST2004Z	SCREW	2mm x 4mm(x2)	
40	QYSDST2004Z	SCREW	2mm x 4mm(x2)	
41	LV20067-002A-N	LIFTER UNIT		
41-1	LV30110-001A	HOOK		
41-2	VKR3203-001	CLAMPER		
41-3	VKL7938-001	CLAMPER GUIDE		
41-4	VKS5587-002	DETECT ROLLER	(x2)	
41-5	VKZ4563-005	O RING	(x4)	
42	LV30148-004A-N	SIDE BKT UNIT		
42-1	LV40190-002A	RETURN SP.(R)		
42-2	LV40148-003A	TRAY GEAR		
42-3	QYWDL163525-6	SLIT WASHER	5.2mm x #NEV	
43	QYSDST2004Z	SCREW	2mm x 4mm(x2)	
44	LV40149-003A	L.BKT(L) ASSY		
45	VYSA1R4-088	SPACER		
46	LV30119-003A	SWITCH LEVER		
47	LV40151-002A	SWITCH SPRING		
48	LV40152-001A	WORM WHEEL(T)		
49	REE1500X	E RING		
50	LV30120-001A	T.MOTOR HOLDER		
51	PPN-13KA10C	MOTOR(FEED)		
52	QUB540-10A2A2	WIRE(T.MOTOR)		
53	QUB541-11A2A2	WIRE(T.MOTOR)		
54	QYSPSPL2004Z	SCREW	2mm x 4mm(x2)	
55	QYSDST2004Z	SCREW	2mm x 4mm(x2)	
56	QYSDST2004Z	SCREW	2mm x 4mm(x2)	
57	LV40474-003A	ELEVATOR SPRING		
58	LV32806-001A-SL	TRA MECHA UNIT		
59	OPTIMA-725B2M	CD PICK UP		
60	FF-050SK-11170	DC MOTOR		
61	QUB456-04A2A2	WIRE(F.MOTOR)		
62	QUB459-05A2A2	WIRE(F.MOTOR)		
63	QYSPSPL2004Z	SCREW	2mm x 4mm	
64	LV40155-001A	MIDDLE GEAR		
65	LV40156-001A	S.S. GEAR		
66	LV40157-001A	SCREW SHAFT		
67	LV30122-002A	SHAFT HOLDER		
68	VKZ4248-204	MINI TAP SCREW		
69	LV30123-002A	RACK ARM		
70	QYSPSPT1722M	MINI SCREW	1.7mm x 2.2mm(x2)	
71	LV32438-001A	P.S.SPRING		
72	QYSPSGT1425M	TAP SCREW	1.4mm x 2.5mm	
73	LV30450-004A	PICK FPC		
74	QYSDST2006Z	SCREW	2mm x 6mm(x3)	
75	QYSDST2005Z	SCREW	2mm x 5mm(x4)	
76	QUQ710-2614BJ	FFC WIRE		
77	QUQ110-1013BJ	FFC WIRE		
78	QYSDSP2606Z	SCREW	2.6mm x 6mm	

ELECTRICAL PARTS LIST

MAIN BOARD

Block No. [0][1][0][0]

⚠ Symbol No.	Part No.	Part Name	Description	Local
IC121	AK4381VT-X	IC		
IC151	NJM4565V-X	IC		
IC501	UPD784217AGC212	IC		
IC502	BD4833FVE-W	IC		
IC503	BR24C01AFV-W-X	IC		
IC541	HD74HCT126T-X	IC		
IC601	TA2157FN-X	IC		
IC621	TC94A14FA	IC		
IC651	TC94A20F-011	IC		
IC652	NJU7241F33-X	IC		
IC653	NJU7241F25-X	IC		
IC681	BD7961FM-X	IC		
IC691	HD74HCT126T-X	IC		
Q161	2SD1048/6-7/-X	TRANSISTOR		
Q261	2SD1048/6-7/-X	TRANSISTOR		
Q501	2SC2412K/R/-X	TRANSISTOR		
Q601	2SB1132/QR/-W	CHIP.TR.C.M		
Q601	2SB1132/QR/-W	CHIP.TR.C.M		
Q601	2SB1132/QR/-W	CHIP.TR.C.M		
Q681	2SB1184/QR/-X	TRANSISTOR		
Q682	2SB1132/QR/-W	CHIP.TR.C.M		
Q901	2SA1037AK/R/-X	CHIP TR.C.M		
Q902	KRC102S-X	DIGI TRANSISTOR		
Q911	2SD1994A/RS/-T	TRANRISTOR		
Q921	2SC2412K/R/-X	TRANSISTOR		
Q922	2SA1037AK/R/-X	CHIP TR.C.M		
Q942	2SD1994A/RS/-T	TRANRISTOR		
Q943	KRA102S-X	DIGI TRANSISTOR		
Q944	KRC102S-X	DIGI TRANSISTOR		
Q971	2SA1037AK/R/-X	CHIP TR.C.M		
Q972	2SC2412K/R/-X	TRANSISTOR		
Q981	2SD1994A/RS/-T	TRANRISTOR		
D161	MA152WA-X	DIODE		
D681	DSK10C-T1	DIODE		
D911	DSK10C-T1	DIODE		
D912	UDZS6.2B-X	Z DIODE		
D913	MA152WA-X	DIODE		
D914	1SS355-X	SI DIODE		
D921	MA152WK-X	SI DIODE		
D941	UDZS9.1B-X	Z DIODE		
D951	UDZS5.1B-X	Z DIODE		
D981	UDZS9.1B-X	Z DIODE		
C121	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
C122	QERF0JM-476Z	E CAPACITOR	47uF 6.3V M	
C123	NDC31HJ-101X	C CAPACITOR	100pF 50V J	
C124	NCS31HJ-471X	C CAPACITOR	470pF 50V J	
C151	QERF1CM-106Z	E CAPACITOR	10uF 16V M	
C152	QERF1CM-106Z	E CAPACITOR	10uF 16V M	
C153	NCB31HK-102X	C CAPACITOR	1000pF 50V K	
C154	NCS31HJ-471X	C CAPACITOR	470pF 50V J	
C155	NCS31HJ-471X	C CAPACITOR	470pF 50V J	
C156	QERF0JM-476Z	E CAPACITOR	47uF 6.3V M	
C157	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
C161	QERF1CM-106Z	E CAPACITOR	10uF 16V M	
C162	NDC31HJ-101X	C CAPACITOR	100pF 50V J	
C163	NDC31HJ-101X	C CAPACITOR	100pF 50V J	
C171	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C251	QERF1CM-106Z	E CAPACITOR	10uF 16V M	
C252	QERF1CM-106Z	E CAPACITOR	10uF 16V M	
C253	NCB31HK-102X	C CAPACITOR	1000pF 50V K	
C254	NCS31HJ-471X	C CAPACITOR	470pF 50V J	
C255	NCS31HJ-471X	C CAPACITOR	470pF 50V J	
C256	QERF0JM-476Z	E CAPACITOR	47uF 6.3V M	
C261	QERF1CM-106Z	E CAPACITOR	10uF 16V M	
C262	NDC31HJ-101X	C CAPACITOR	100pF 50V J	
C501	QERF1AM-227Z	E CAPACITOR	220uF 10V M	
C502	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C503	NDC31HJ-8R0X	C CAPACITOR	8pF 50V J	
C504	NDC31HJ-270X	C CAPACITOR	27pF 50V J	

⚠ Symbol No.	Part No.	Part Name	Description	Local
C505	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C506	QERF0JM-476Z	E CAPACITOR	47uF 6.3V M	
C507	QERF0JM-107Z	E CAPACITOR	100uF 6.3V M	
C508	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
C509	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
C510	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
C511	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
C512	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C541	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C601	QERF0JM-476Z	E CAPACITOR	47uF 6.3V M	
C602	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C603	QERF0JM-107Z	E CAPACITOR	100uF 6.3V M	
C604	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C605	NCB31HK-682X	C CAPACITOR	6800pF 50V K	
C606	QERF0JM-476Z	E CAPACITOR	47uF 6.3V M	
C607	NBE20JM-106X	TA E CAPACITOR	10uF 6.3V M	
C608	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
C609	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
C610	NDC31HJ-5R0X	C CAPACITOR	5pF 50V J	
C611	NDC31HJ-680X	C CAPACITOR	68pF 50V J	
C612	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C613	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C614	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C621	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C622	QERF0JM-476Z	E CAPACITOR	47uF 6.3V M	
C623	NDC31HJ-470X	C CAPACITOR	47pF 50V J	
C624	NCB31HK-153X	C CAPACITOR	0.015uF 50V K	
C625	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C626	NCB31HK-272X	C CAPACITOR	2700pF 50V K	
C627	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C628	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
C629	NCB31EK-333X	C CAPACITOR	0.033uF 25V K	
C630	NCB31EK-333X	C CAPACITOR	0.033uF 25V K	
C631	NCS31HJ-471X	C CAPACITOR	470pF 50V J	
C632	NCS31HJ-471X	C CAPACITOR	470pF 50V J	
C633	NCB31CK-473X	C CAPACITOR	0.047uF 16V K	
C634	NCB31CK-473X	C CAPACITOR	0.047uF 16V K	
C635	NCB31CK-473X	C CAPACITOR	0.047uF 16V K	
C636	NCB31CK-473X	C CAPACITOR	0.047uF 16V K	
C637	NCB31CK-473X	C CAPACITOR	0.047uF 16V K	
C638	NDC31HJ-101X	C CAPACITOR	100pF 50V J	
C639	QERF0JM-476Z	E CAPACITOR	47uF 6.3V M	
C640	NDC31HJ-100X	C CAPACITOR	10pF 50V J	
C641	NDC31HJ-100X	C CAPACITOR	10pF 50V J	
C642	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C643	QERF0JM-476Z	E CAPACITOR	47uF 6.3V M	
C644	NDC31HJ-101X	C CAPACITOR	100pF 50V J	
C645	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
C647	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C648	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
C649	QERF0JM-476Z	E CAPACITOR	47uF 6.3V M	
C650	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C651	QERF0JM-476Z	E CAPACITOR	47uF 6.3V M	
C652	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C653	QERF0JM-476Z	E CAPACITOR	47uF 6.3V M	
C654	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
C655	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C656	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
C657	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
C658	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
C659	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
C660	NDC31HJ-101X	C CAPACITOR	100pF 50V J	
C661	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C662	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
C663	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
C664	NCB31EK-273X	C CAPACITOR	0.027uF 25V K	
C665	NCB31AK-334X	C CAPACITOR	0.33uF 10V K	
C666	NDC31HJ-101X	C CAPACITOR	100pF 50V J	
C667	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C668	QERF0JM-476Z	E CAPACITOR	47uF 6.3V M	
C669	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C671	QERF0JM-476Z	E CAPACITOR	47uF 6.3V M	
C672	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
C673	NDC31HJ-101X	C CAPACITOR	100pF 50V J	

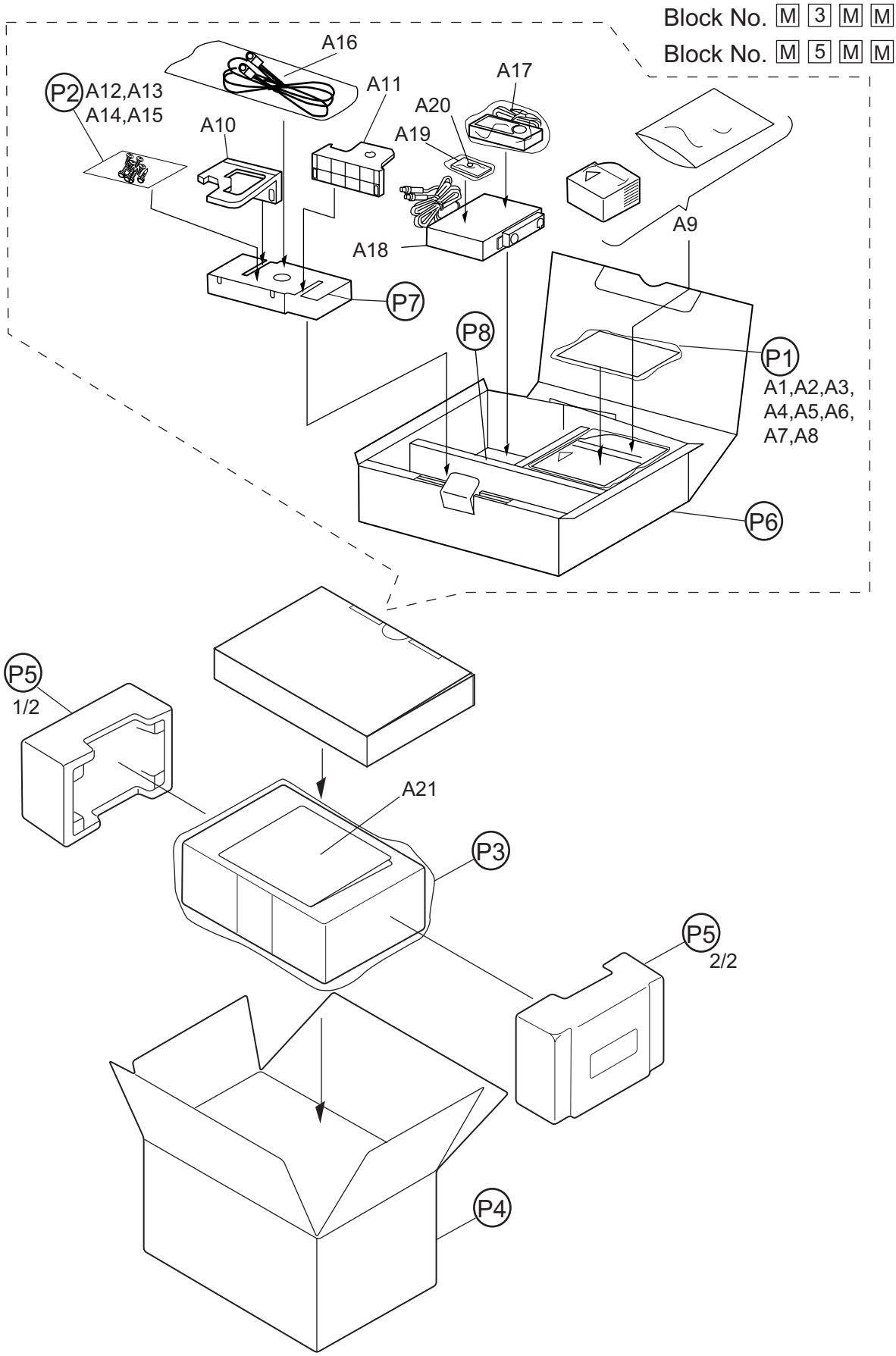
⚠ Symbol No.	Part No.	Part Name	Description	Local
C674	QERF0JM-476Z	E CAPACITOR	47uF 6.3V M	
C675	QERF0JM-476Z	E CAPACITOR	47uF 6.3V M	
C676	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C681	NBE21AM-106X	TA E CAPACITOR	10uF 10V M	
C682	NBE21AM-106X	TA E CAPACITOR	10uF 10V M	
C683	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
C684	QERF1AM-107Z	E CAPACITOR	100uF 10V M	
C691	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
C902	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C906	NDC31HJ-101X	C CAPACITOR	100pF 50V J	
C907	NDC31HJ-101X	C CAPACITOR	100pF 50V J	
C908	NDC31HJ-101X	C CAPACITOR	100pF 50V J	
C912	QERF1CM-107Z	E CAPACITOR	100uF 16V M	
C913	QERF1AM-107Z	E CAPACITOR	100uF 10V M	
C914	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C915	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C941	QERF1CM-106Z	E CAPACITOR	10uF 16V M	
C942	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C943	QERF1CM-476Z	E CAPACITOR	47uF 16V M	
C944	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C945	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C951	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C982	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C983	QERF1CM-476Z	E CAPACITOR	47uF 16V M	
C984	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
R103	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
R121	NRSA63J-391X	MG RESISTOR	390Ω 1/16W J	
R122	NRSA63J-391X	MG RESISTOR	390Ω 1/16W J	
R123	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
R151	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	
R152	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	
R153	NRSA63J-222X	MG RESISTOR	2.2kΩ 1/16W J	
R154	NRSA63J-222X	MG RESISTOR	2.2kΩ 1/16W J	
R155	NRSA63J-392X	MG RESISTOR	3.9kΩ 1/16W J	
R156	NRSA63J-392X	MG RESISTOR	3.9kΩ 1/16W J	
R157	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R158	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R161	NRSA63J-223X	MG RESISTOR	22kΩ 1/16W J	
R162	NRSA63J-471X	MG RESISTOR	470Ω 1/16W J	
R163	NRSA63J-682X	MG RESISTOR	6.8kΩ 1/16W J	
R171	NRSA63J-471X	MG RESISTOR	470Ω 1/16W J	
R221	NRSA63J-391X	MG RESISTOR	390Ω 1/16W J	
R222	NRSA63J-391X	MG RESISTOR	390Ω 1/16W J	
R251	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	
R252	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	
R253	NRSA63J-222X	MG RESISTOR	2.2kΩ 1/16W J	
R254	NRSA63J-222X	MG RESISTOR	2.2kΩ 1/16W J	
R255	NRSA63J-392X	MG RESISTOR	3.9kΩ 1/16W J	
R256	NRSA63J-392X	MG RESISTOR	3.9kΩ 1/16W J	
R257	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R258	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R261	NRSA63J-223X	MG RESISTOR	22kΩ 1/16W J	
R262	NRSA63J-471X	MG RESISTOR	470Ω 1/16W J	
R263	NRSA63J-682X	MG RESISTOR	6.8kΩ 1/16W J	
R502	NRSA63J-473X	MG RESISTOR	47kΩ 1/16W J	
R505	NRSA63J-473X	MG RESISTOR	47kΩ 1/16W J	
R507	NRSA63J-473X	MG RESISTOR	47kΩ 1/16W J	
R508	NRSA63J-473X	MG RESISTOR	47kΩ 1/16W J	
R509	NRSA63J-473X	MG RESISTOR	47kΩ 1/16W J	
R510	NRSA63J-473X	MG RESISTOR	47kΩ 1/16W J	
R511	NRSA63J-821X	MG RESISTOR	820Ω 1/16W J	
R512	NRSA63J-222X	MG RESISTOR	2.2kΩ 1/16W J	
R513	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R514	NRSA63J-104X	MG RESISTOR	100kΩ 1/16W J	
R515	NRSA63J-473X	MG RESISTOR	47kΩ 1/16W J	
R516	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
R517	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R518	NRSA63J-473X	MG RESISTOR	47kΩ 1/16W J	
R519	NRSA63J-822X	MG RESISTOR	8.2kΩ 1/16W J	
R520	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	
R521	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	
R522	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	
R523	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	
R524	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R525	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R526	NRSA63J-392X	MG RESISTOR	3.9kΩ 1/16W J	
R527	NRSA63J-392X	MG RESISTOR	3.9kΩ 1/16W J	

⚠ Symbol No.	Part No.	Part Name	Description	Local
R528	NRSA63J-392X	MG RESISTOR	3.9kΩ 1/16W J	
R529	NRSA63J-393X	MG RESISTOR	39kΩ 1/16W J	
R530	NRSA63J-682X	MG RESISTOR	6.8kΩ 1/16W J	
R531	NRSA63J-682X	MG RESISTOR	6.8kΩ 1/16W J	
R532	NRSA63J-682X	MG RESISTOR	6.8kΩ 1/16W J	
R533	NRSA63J-683X	MG RESISTOR	68kΩ 1/16W J	
R534	NRSA63J-473X	MG RESISTOR	47kΩ 1/16W J	
R535	NRSA63J-473X	MG RESISTOR	47kΩ 1/16W J	
R536	NRSA63J-104X	MG RESISTOR	100kΩ 1/16W J	
R537	NRSA63J-104X	MG RESISTOR	100kΩ 1/16W J	
R538	NRSA63J-104X	MG RESISTOR	100kΩ 1/16W J	
R539	NRSA63J-104X	MG RESISTOR	100kΩ 1/16W J	
R540	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R541	NRSA63J-104X	MG RESISTOR	100kΩ 1/16W J	
R542	NRSA63J-223X	MG RESISTOR	22kΩ 1/16W J	
R543	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J	
R544	NRSA63J-223X	MG RESISTOR	22kΩ 1/16W J	
R545	NRSA63J-334X	MG RESISTOR	330kΩ 1/16W J	
R546	NRSA63J-334X	MG RESISTOR	330kΩ 1/16W J	
R547	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J	
R548	NRSA63J-223X	MG RESISTOR	22kΩ 1/16W J	
R549	NRSA63J-331X	MG RESISTOR	330Ω 1/16W J	
R550	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R551	NRSA63J-104X	MG RESISTOR	100kΩ 1/16W J	
R601	NRSA63J-823X	MG RESISTOR	82kΩ 1/16W J	
R602	NRSA63J-823X	MG RESISTOR	82kΩ 1/16W J	
R603	NRSA63J-334X	MG RESISTOR	330kΩ 1/16W J	
R604	NRSA63J-334X	MG RESISTOR	330kΩ 1/16W J	
R605	NRSA63J-220X	MG RESISTOR	22Ω 1/16W J	
R606	NRSA63J-220X	MG RESISTOR	22Ω 1/16W J	
R607	NRSA63J-823X	MG RESISTOR	82kΩ 1/16W J	
R608	NRSA63J-821X	MG RESISTOR	820Ω 1/16W J	
R609	NRSA63J-563X	MG RESISTOR	56kΩ 1/16W J	
R610	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J	
R611	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R612	NRSA63J-202X	MG RESISTOR	2kΩ 1/16W J	
R613	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
R614	NRSA63J-153X	MG RESISTOR	15kΩ 1/16W J	
R615	NRSA63J-151X	MG RESISTOR	150Ω 1/16W J	
R616	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R621	NRSA63J-221X	MG RESISTOR	220Ω 1/16W J	
R622	NRSA63J-221X	MG RESISTOR	220Ω 1/16W J	
R623	NRSA63J-221X	MG RESISTOR	220Ω 1/16W J	
R624	NRSA63J-562X	MG RESISTOR	5.6kΩ 1/16W J	
R625	NRSA63J-473X	MG RESISTOR	47kΩ 1/16W J	
R626	NRSA63J-474X	MG RESISTOR	470kΩ 1/16W J	
R627	NRSA63J-153X	MG RESISTOR	15kΩ 1/16W J	
R628	NRSA63J-155X	MG RESISTOR	1.5MΩ 1/16W J	
R629	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R630	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J	
R631	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J	
R635	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J	
R636	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J	
R637	NRSA63J-105X	MG RESISTOR	1MΩ 1/16W J	
R638	NRSA63J-470X	MG RESISTOR	47Ω 1/16W J	
R639	NRSA63J-330X	MG RESISTOR	33Ω 1/16W J	
R640	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	
R641	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	
R642	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	
R643	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	
R644	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R645	NRSA63J-471X	MG RESISTOR	470Ω 1/16W J	
R646	NRSA63J-471X	MG RESISTOR	470Ω 1/16W J	
R647	NRSA63J-471X	MG RESISTOR	470Ω 1/16W J	
R651	NRSA63J-104X	MG RESISTOR	100kΩ 1/16W J	
R654	NRSA63J-221X	MG RESISTOR	220Ω 1/16W J	
R674	NRSA63J-331X	MG RESISTOR	330Ω 1/16W J	
R675	NRSA63J-331X	MG RESISTOR	330Ω 1/16W J	
R677	NRSA63J-105X	MG RESISTOR	1MΩ 1/16W J	
R681	NRSA63J-432X	MG RESISTOR	4.3kΩ 1/16W J	
R682	NRSA63J-823X	MG RESISTOR	82kΩ 1/16W J	
R683	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
R684	NRSA63J-473X	MG RESISTOR	47kΩ 1/16W J	
R691	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
R692	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
R693	NRSA63J-221X	MG RESISTOR	220Ω 1/16W J	
R694	NRSA63J-331X	MG RESISTOR	330Ω 1/16W J	
R901	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	

⚠ Symbol No.	Part No.	Part Name	Description	Local
R902	NRSA63J-392X	MG RESISTOR	3.9kΩ 1/16W J	
R903	NRSA63J-222X	MG RESISTOR	2.2kΩ 1/16W J	
R911	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	
R912	NRSA02J-2R2X	MG RESISTOR	2.2Ω 1/10W J	
R921	NRSA63J-273X	MG RESISTOR	27kΩ 1/16W J	
R923	NRSA63J-184X	MG RESISTOR	180kΩ 1/16W J	
R924	NRSA63J-682X	MG RESISTOR	6.8kΩ 1/16W J	
R925	NRSA63J-223X	MG RESISTOR	22kΩ 1/16W J	
R926	NRSA63J-223X	MG RESISTOR	22kΩ 1/16W J	
R941	NRSA63J-100X	MG RESISTOR	10Ω 1/16W J	
R942	NRSA63J-471X	MG RESISTOR	470Ω 1/16W J	
R943	NRSA63J-332X	MG RESISTOR	3.3kΩ 1/16W J	
R951	NRSA63J-122X	MG RESISTOR	1.2kΩ 1/16W J	
R954	NRSA63J-272X	MG RESISTOR	2.7kΩ 1/16W J	
R971	NRSA63J-223X	MG RESISTOR	22kΩ 1/16W J	
R972	NRSA63J-222X	MG RESISTOR	2.2kΩ 1/16W J	
R973	NRSA63J-104X	MG RESISTOR	100kΩ 1/16W J	
R981	NRSA63J-221X	MG RESISTOR	220Ω 1/16W J	
R982	NRSA63J-221X	MG RESISTOR	220Ω 1/16W J	
L501	NQL114K-470X	COIL	47uH K	
L541	NQL093K-1R8X	COIL	1.8uH K	
L542	NQL093K-1R8X	COIL	1.8uH K	
L621	NQL114K-470X	COIL	47uH K	
L622	NQL114K-470X	COIL	47uH K	
L623	NQL114K-470X	COIL	47uH K	
L651	NQL114K-470X	COIL	47uH K	
L652	NQL114K-470X	COIL	47uH K	
L653	NQL114K-470X	COIL	47uH K	
CN603	QGF1013F1-15X	CONNECTOR	FFC/FPC (1-15)	
CN604	QGF1006F1-26W	CONNECTOR	FFC/FPC (1-26)	
CN903	QGF1013F1-10X	CONNECTOR	FFC/FPC (1-10)	
S501	QSW0643-001Z	TACT SWITCH		
X501	QAX0617-001Z	CRYSTAL		
X621	QAX0413-001Z	CRYSTAL		

<MEMO>

PACKING MATERIALS AND ACCESSORIES PARTS LIST



PACKING

Block No. [M][3][M][M]

⚠ Symbol No.	Part No.	Part Name	Description	Local
P 1	FSPG4002-001	POLY BAG		
P 2	QPA00801205	POLY BAG	8cm x 12cm	
P 3	QPC03005120P	POLY BAG	30cm x 51cm	
P 4	LV33923-001A	CARTON		
P 5	LV10504-001A	CUSHION		
P 6	LV30453-003A	ACCESSARY BOX		
P 7	LV30575-002A	SEPALATOR		
P 8	LV30576-002A	SPACER		

ACCESSORIES

Block No. [M][5][M][M]

⚠ Symbol No.	Part No.	Part Name	Description	Local
A 1	LVT0975-001A	INST BOOK		
A 2	LVT0976-001A	INST BOOK		
A 3	BT-51018-3	WARRANTY CARD		
A 4	BT-51028-2	J=REGIST CARD		
A 5	BT-20071B	SVC CENTER LIST		
A 6	BT-52006-2	WARRANTY CARD		
A 7	LVT0770-003C	INST SHEET		
A 8	LVT0327-001B	TROUBLE SHOOTIN		
A 9	LV30682-205A-CL	MAGAZINE ASS'Y		
A 10	LV21416-001A	MOUNT HOLDER(L)		
A 11	LV21415-001A	MOUNT HOLDER(R)		
A 12	QYSDSP4008Z	SCREW	4mm x 8mm(x4)	
A 13	VKZ4029-003	SCREW	(x4)	
A 14	VYTT546-004	SHEET(B)	(x2)	
A 15	VYTT547-004	SHEET(A)	(x2)	
A 16	QAM0149-001	8P BUS-BUS CORD		
A 17	LV43267-001A	DISPLAY UNIT		
A 18	LV43266-001A	RF UNIT		
A 19	RM-RK42	REMOCON		
A 20	----------	BATTERY		
A 21	LV40507-001A	INST SHEET		